



# Safety Manual

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*CITY OF PENDLETON*  
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# CITY OF PENDLETON SAFETY MANUAL

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# CHAPTER 1: SAFETY RESPONSIBILITIES

## A. MANAGEMENT COMMITMENT

Just as we each have responsibilities for our various job duties, we also are responsible for workplace safety and must be accountable for meeting these responsibilities.

Management and supervisory personnel are accountable for the safety of employees working under their supervision, and will be expected to conduct operations in a safe manner at all times. Management has the overall responsibility for the establishment, implementation, administration, and governance of the total safety program. **The Management staff responsibilities include:**

1. Ensuring that safety and health regulations are observed.
2. Developing and implementing the safety program.
3. Encourage active participation in the Safety Suggestion program, which includes identification of safety hazards, potential standardized methods of performing tasks, and any other items that would improve the safety and wellness of employees. All safety suggestions must be forwarded, without any fear of retribution, to the City Central Safety and Wellness Committee for evaluation.
4. Assisting in preparation and revision of safety policies and implementation of safety rules.
5. Monitoring and auditing the operation of each department or facility for safety and health hazards.
6. Establishing or approving procedures for hazardous operations.
7. Overseeing the investigation of all accidents, reporting near-misses or hazardous conditions, and assuring that appropriate steps for corrective action are implemented in a timely manner. In the event of an accident, conducting a complete and thorough investigation before leaving work for the day.
8. Reviewing and approving the safety aspects of any facility layout, design, and alteration.
9. Documenting contact with any worker who is away from work due to a work-related injury or illness.
10. Completing the safety orientation of new employees and conducting mandatory safety meetings and training.
11. Maintaining the OSHA injury and illness logs and complying with state and federal injury reporting requirements.
12. Retaining exposure and medical monitoring records.
13. Handling our workers' compensation program.
14. Assisting supervisors with safety performance issues, if requested, or if there is a specific trend of injuries.
15. Administering all other insurance including property, liability, workers' compensation, and employee health insurance.
16. Maintaining contact with the City Central Safety Committee (Safety Committee).
17. Any supervisors or persons in charge of work are the agents of the employer in the discharge of their authorized duties and are responsible for:
  - a. The safe performance of the work under their supervision;
  - b. The safe conduct of the crew under their supervision; and
  - c. The safety of all workers under their supervision.

## B. EMPLOYEES' RESPONSIBILITIES

Employees' role in safety is critical. Employees are responsible to follow proper safety and health practices. Safe work practices are for all our employees' benefit. **The employees' responsibilities include:**

1. Carrying out each task using every required and reasonable precaution to protect themselves and co-workers from injury.
2. Being alert to, and reporting, any unsafe conditions or practices observed to the immediate supervisor.
3. Immediately reporting all injuries to the immediate supervisor.
4. Being familiar with and abiding by the safety policies as described in the Safety Manual.
5. Informing the Supervisor when additional safety training is needed.
6. Maintaining weekly contact with the Supervisor if the worker is away from work due to a work-related injury or illness.
7. Actively participating in the Safety Suggestion program by filling out the Safety Suggestion form and depositing in suggestion boxes located in each department and/or forwarding it to supervisor and Department Head. If for some reason Safety Suggestion forms are unavailable, an email with the safety or health concern can be submitted to the supervisor and Department Head. (Note: All safety and wellness written concerns forwarded to supervisors and Department Heads must be forwarded to the City Central Safety & Wellness Committee).
8. The Safety Suggestion form example is attached under [Appendix 60](#).

## C. CITY CENTRAL SAFETY COMMITTEE RESPONSIBILITIES

The Safety Committee's role is to advise management on safety-related issues in the work place and to provide leadership in protecting the safety and health of all our employees. The Safety Committee plays an essential role in the overall safety effort and serves as the primary means of communicating and exchanging information on safety issues. The Safety Committee meets monthly and will provide reports to the management team. Though the Safety Committee's role is advisory, all reasonable means will be taken by management to address the concerns of the committee. The Safety Committee Charter is defined in detail in Chapter 1. **The Safety Committee's responsibilities include:**

1. Recommending and promoting programs to improve the safety, health, training, and education of employees.
2. Monitoring the programs and work procedures designed for employee safety and health.
3. Evaluate all individual employee safety and wellness concerns and suggestions that are submitted through the Safety Suggestion program. The Committee must communicate with management regarding concerns and suggestions, and report back to the individual employee in a timely manner.
4. Participating in safety inspections and accident investigations.
5. Providing a means for employees to work together to identify hazards and develop acceptable solutions to safety problems.

## D. SAFETY COMMITTEE CHAIR RESPONSIBILITIES

The Chair of the Safety Committee will be elected by the members. **The Safety Committee Chair's responsibilities include:**

1. Arranging Safety Committee meetings and preparing meeting agendas.
2. Chairing monthly Safety Committee meetings.
3. Coordinating quarterly safety inspections and distributing inspection forms.

4. Coordinate all correspondence pertaining to any City safety program.

#### **E. DISCIPLINARY ACTIONS FOR UNSAFE PRACTICES**

The Supervisor shall refer to City Policies and/or union contracts as applicable to determine steps for disciplinary action.

## CHAPTER 2: SELF-INSURED LOSS PREVENTION PROGRAM

Oregon OSHA requires specific Loss Prevention Activities to be performed by group self-insured Employers (OAR 437-01-1055 & 1060). This includes a written plan and specific activities. The following outlines the OSHA requirements and the primary compliance methods.

Written occupational health and safety loss prevention program.

The program is to address the loss prevention effort and inform its management and employees of the availability and process for requesting loss prevention services. Our overall Safety Manual, and particularly Chapter 1 Section A, meets this requirement.

### A. REQUIRED LOSS PREVENTION ELEMENTS

The following elements are required by Oregon OSHA for each group and self-insured employer. The overall operation of our safety program and recordkeeping will meet these elements.

1. Management commitment to health and safety
  - a. Method of compliance: The statement of commitment is primarily our Safety Manual, but commitment is also shown by our responsiveness to the Safety Committee's concerns.
  - b. Recordkeeping: The Safety Manual and written responses to Safety Committee's concerns are maintained by the Administration.
2. Accountability system for employer and employees
  - a. Method of compliance: Each employee's job performance includes review of safety behavior and activities.
  - b. Recordkeeping: The Administrative Services Officer retains employee performance records and any record of discipline for safety issues.
3. Training practices and follow-up
  - a. Method of compliance: Training is the responsibility of the Supervisor. We have developed a schedule for training and have identified the specific training needs.
  - b. Recordkeeping: The record of training is maintained by the Supervisor and the Administrative Services Officer.
4. Provide a system for hazard assessment and controls
  - a. Method of compliance: The City Central Safety Committee's (Safety Committee) quarterly inspections and supervisor's routine review of their work group activities at the various work project locations will serve to ensure that we have appropriate auditing.
  - b. Recordkeeping: The primary records of the inspection and audit services will be maintained by the Safety Committee Chair. The Safety Committee will make a report of each quarterly inspection; this report will be placed in the Safety Committee inspection file. Any written inspection report done by a Supervisor, (such as lockout / tag out annual inspection), will be kept in the Supervisor's safety file.
5. A system for investigating all recordable occupational injuries and illnesses that includes corrective action and written findings
  - a. Method of compliance: Management and/or the supervisors are responsible for completing accident investigations. The specific method and training materials are provided in Chapter 5 of the Safety Manual. The Safety Committee also reviews and comments on the accident investigations and may participate in some of the investigations.



- b. Recordkeeping: The primary accident investigation records are maintained by the City Manager's Officer.
6. A system for evaluating, obtaining and maintaining personal protective equipment (PPE)
  - a. Method of compliance: Each Supervisor has overall responsibility for ensuring the selection, purchase, proper use and maintenance of appropriate PPE. The Safety Committee and others conducting daily or quarterly inspections will review the PPE program's adequacy. Chapter 8 of the Safety Manual provides PPE policy, selection, maintenance, and training information.
  - b. Recordkeeping: The primary records for PPE inspection are maintained by the Supervisor.
7. On-site routine industrial hygiene and safety evaluations to detect physical and chemical hazards in the workplace and implement engineering or administrative controls.
  - a. Method of compliance: Basic occupational safety and health inspections are done by the Safety Committee and supervisors. More technical assistance is provided by our City/County Insurance Services representative, Oregon OSHA consultants and private safety and industrial hygiene consultants.
  - b. Recordkeeping: The primary records of the inspection and audit services will be maintained by the managers, supervisors and Safety Committee.
8. Evaluation of workplace design, layout and operation, and assistance with job site modifications utilizing an ergonomic approach.
  - a. Method of compliance: Basic ergonomic inspections are done by the Safety Committee. More technical assistance is provided by our City/County Insurance Services loss control staff, Oregon OSHA consultants and private consultants.
  - b. Recordkeeping: The primary records of the ergonomic survey and findings will be maintained by the Supervisor or Manager of the group or department receiving the evaluation.
9. Employee involvement in health and safety efforts
  - a. Method of compliance: This is a primary concern for management and the Safety Committee. Routine meetings or staff meetings are the primary focus for employee involvement. Safety is a daily activity, and our employees are expected to perform their work as instructed for individual safety, as well as the safety of co-workers.
  - b. Recordkeeping: The primary records of employee involvement are found in the Supervisor's safety inspection records, minutes of staff meetings or in the Safety Committee minutes.
10. An annual evaluation of the employer's loss prevention activities based on the location's current needs.
  - a. Method of compliance: An annual report will be prepared in January of each year for the previous year's activities. The report, currently known as the OSHA 300 log, will be prepared by the management staff and will meet OR-OSHA requirements. The report will be posted at each facility for three (3) months.
  - b. Recordkeeping: Annual reports will be maintained by the City Manager's office and made available to the Safety Committee and Oregon OSHA upon request.

## CHAPTER 3: RECORDKEEPING

The Safety Program requires that many different types of records be retained. The programs have been written so that the Department or group initiating the records are required to keep a copy and forward the master to the management team as the primary "keeper of records".

All injury reports - 801's, and medical records - are also kept by Management.

The following chart shows what records must be maintained.

### OSHA WRITTEN RECORD REQUEST SUMMARY

Record/Plan	Overall Plan	Written Training	Type of Record Inspection	Retention Time
<b>1. Injury Records 437-001-700</b>				
<b>a. Form 300</b>	X (complete w/in 7 days)			5 years
<b>b. Form 801</b>	X (complete w/in 7 days)			5 years
<b>c. Form 300A</b>	X (post for February, March, April)			5 years
<b>d. Accident Investigation 437-001-0760(3)</b>	X each time loss accident		X	5 years
<b>2. Employee Exposure 1910.20(d)</b>		X		30 yrs + emp.
<b>3. Bloodborne Pathogens 1910.1030©(1)</b>	X	X	X (incident investigation)	30 yrs + emp. Medical record, training 3 yrs
<b>4. Medical Plan &amp; Records 1910.20(d) &amp; 1910.151 &amp; 437-02-161(4)</b>	X			30 yrs + emp.
<b>5. Emergency Plan 1910.38(a)(2)</b>				Not specified
<b>6. Fall Protection 1926.502(k)</b>	X	X	X	Not specified
<b>7. Fire Plan 1910.38(b)(2)</b>	X			Not specified
<b>8. Specific Chemical Subs. (minimum requirements)*</b>				
<b>a. Exposure Record</b>			X	30 yrs

<b>b. Medical Exams</b>			X	30 yrs + emp.
<b>c. Resp. Fit Testing *(in some cases)</b>			X	Most current
Example Formaldehyde 1910.1048((m)(5))				
<b>9. Asbestos Plan</b>				
11. 1910.1001	X	X	X	Current + 30 yrs.
12. 1926.1101(k)				
<b>10. Haz Communication 1910.1200(e)</b>				
<b>a. Written Plan</b>	X		X	Need current
<b>b. SDS or list</b>			X	30 yrs. + emp.
<b>c. Employee Training</b>		X		
<b>11. Lockout/Tagout</b>				
<b>a. Written Procedures</b>	X			Not specified
<b>b. Periodic Audit</b>			X (annually)	Not specified
<b>c. Employee Training</b>		X		Not specified
1910.147(c)(4)				
<b>12. Hazardous Materials</b>				
<b>a. Written Plan</b>	X			Current plan
<b>b. Employee Training</b>		X (annually)		Current plan
<b>13. Laboratories 1910.1450(e)</b>	X	X	X (annual review)	30 yrs. + emp.
<b>14. Noise &amp; Hearing Cons.</b>				
<b>a. Employee Exposure levels</b>			X	2 yrs.
<b>b. Audiogram</b>			X	5 yrs. + emp.
<b>c. Calibration Data</b>			X	Current levels
1910.95(c)				

<b>15. Personal Protective Equipment 1910.132(d)</b>	X	X	X	Not specified
<b>16. Respirators</b>				
<b>a. Written Program</b>	X			Not specified
<b>b. Inspection Maintenance Emergency Use Respirators</b>	X		Monthly	Not specified
1910.134(b)(1)				
<b>17. Safety Committees (OR/WA) 437-001*0765</b>	X	X	X (minutes)	3 yrs
<b>18. Crane Inspections</b>				
<b>a. Daily</b>			**	
<b>b. Monthly</b>			X	Not specified
<b>c. Annual</b>			X	Not specified
<b>19. Fire Protection</b>				
<b>a. Fire Extinguishers</b>			X (annual)	1 yr or replaced by a new record
<b>b. Standpipe &amp; hose</b>			X (annual)	Not specified
<b>c. Fire Detection</b>			X (periodic)	Not specified
1910.157(e), 1910.159(c), 1910.164(c)				
<b>20. Mechanical Power Press</b>			X	Not specified
1910.21(h)(10) and (11)				
<b>21. Safety Inspections/Audits</b>			X (quarterly saf. Comm.)	3 yrs
<b>22. Confined Space Entry 1910.146(d) &amp; (e)</b>	X	X	X (entry permit required)	1 yr – permit
<b>23. Process Safety 1910.119</b>	X (5 yr updates)	X	X (audits, incident records)	Various (see rules)
<b>24. Welding 1910.252(xiii) &amp; (xiv)</b>			X (periodic)	Not specified
<b>25. Lead Plan General Industry 1910.105(e)(3)</b>	X	X	X	Current + 30 yrs.

<b>and 1926.62 (maintenance or removal of lead painted or containing building materials)</b>				
<b>26. Hexavalent Chrome Plan Gen. Industry 1910.1026</b>	X	X	X	Current + 30 yrs.
<b>27. General Instruction</b>	X	X		Not specified

\* **Chemical Substances Specific Standards include:** acrylonitrile, asbestos, anhydrous ammonia, arsenic, benzene, carcinogens, ethylene oxide, formaldehyde, lead, vinyl chloride, DBCP, cadmium.

\*\* **Crane Regulation** 1910.179-.182 requires daily visual inspections and CIS recommends daily inspections should be recorded daily in writing.

\*\*\* Health care employees as defined in ORS 654.001 to 654.295 must record assaults against employees on the Health Care Assault Log. If the incident results in a serious injury or fatality, it must be immediately reported to OR-OSHA, and recorded on the OSHA 300 Log.

## CHAPTER 4: SAFETY & HEALTH TRAINING PROGRAM

The major component to the safety program is employee training. Training efforts will be directed at developing each employee's knowledge, skills, and understanding of safe work practices. Training will be provided through various means; however, the primary responsibility for instruction will be the Department Head, Supervisor or designee.

### A. NEW EMPLOYEE ORIENTATION PROGRAM

All new employees will participate in a "**New Employee Orientation Program.**" Such training is conducted in a two-phase approach:

1. The new worker will receive generalized instruction by the employee's Supervisor or designee to provide a basic understanding of all safety programs; training will be documented.
2. Facility and job-specific training will be given by the employee's immediate Supervisor or lead worker before the employee will be allowed to begin actual work; training will be documented.

### B. EMPLOYEE TRAINING

Job-specific training is additionally provided to all employees as needed. If an employee is reassigned to a new work area, this training is again accomplished by either the Department Head, Supervisor or designee; training will be documented.

1. The Safety Manual and training matrix listed below identify the possible training requirements for employees. Some subjects are mandatory in nature, requiring their annual review. Other subject areas are deemed mandatory only for selected operations, or when employees are reassigned.

### C. OREGON OSHA BASIC GENERAL INDUSTRY TRAINING REQUIREMENTS

Program	Training Frequency			Written Program
	Initial	Annual	Retraining Required	
General Duty to Train	X		If program/hazards change	No
Signs or Labels	X		If signs change	No
Crane Operator	X		Construction – 3 yrs General if changes or problems	Yes
Electrical	X		Job duties change	No
Emergency Medical Plan	X		If plan changes – update	Yes
Emergency/Fire Prevention	X		If plan changes – update	Yes
Fall Protection (construction & repair)	X		If plan/equipment change or inadequacies found	Yes
Fire Extinguishing System	X	X		No
First Aid/CPR	X		1-3 years	No
Forklift Operator	X		Every 3 yrs. classroom & practical	Yes
Lockout/Tagout	X		If plan changes or problems noted	Yes
Mechanical Power Press	X		Initial must remain competent	No
Power Platforms	X		Initial must remain competent	No
Pressure Vessels	Competent person required			No
Safety Committee	X		New members	Yes
Welding	X		Initial must remain competent	No

## D. OCCUPATIONAL HEALTH REGULATIONS

Program	Initial Training	Annual Training	Retraining Required	Written Program
Access to Exposure & Medical Records	X	X		No
Asbestos (awareness) Note: Extensive training for actual abatement or renovation)	X	X		Yes plan & notification
Bloodborne Pathogens	X	X	When plan changes	Yes
Confined Space	X		If plan changes/annual for rescue staff	Yes
Chemicals *	X		If over action level	Yes for some
Hazard Communication	X		If new chemicals are used	Yes
Haz. Mat'ls Response 5 levels 4 to 40 hours	X	X		Yes
Laboratories	X		If plan/chemicals change	Yes
Lead (awareness) (note: extensive training for actual abatement and renovation)	X	X	Posting	Yes
Hearing Conservation	X	X		No
Personal Protective Equipment	X		If there are changes or problems noted	Yes
Process Safety	X	X	Training certificate required	Yes
Respirators	X	X	Or when changes or problems noted	Yes

\*Specific chemical substance standards include: acrylonitrile, asbestos, anhydrous ammonia, arsenic, benzene, cadmium, carcinogens, ethylene oxide, formaldehyde, lead, methylene chloride, vinyl chloride, DBCP, Pesticides.

**NOTE:** THIS LISTING DID NOT INCLUDE A VARIETY OF THE POSTING RECORDS AND DOES NOT INCLUDE ALL REFERENCES TO COMPETENT OR QUALIFIED EMPLOYEES. FURTHER THERE ARE ADDITIONAL OCCUPATIONAL HEALTH RULES SUCH AS ASBESTOS WHICH REQUIRE TRAINED EMPLOYEES BUT WERE NOT LISTED SEPARATELY. CONSTRUCTION STANDARD REQUIREMENTS ARE NOT PROVIDED IN THIS LISTING.

## CHAPTER 5: ACCIDENT INVESTIGATION PROCEDURES

### A. PURPOSE

The City of Pendleton is committed to accident prevention in order to protect the safety and health of employees. Our goal is to eliminate workplace accidents and illnesses. However, should they occur, the City will thoroughly investigate them to determine the cause(s) and appropriate corrective action to be taken to prevent future recurrence. Our focus is not simply on unsafe acts or conditions which may have led to the accident, but also on why the unsafe acts or conditions were present. From this perspective, we are better able to identify any changes that are necessary.

### B. APPLICABLE LEGAL STANDARDS

#### 1. OAR 437-001-0760(3) Investigation of Injuries:

“Each employer shall investigate or cause to be investigated every lost time injury that workers suffer in connection with their employment, to determine the means that should be taken to prevent recurrence. The employer shall promptly install any safeguard or take any corrective measure indicated or found advisable.”

#### 2. OAR 437-001-0765(6)(g) Safety Committee/Accident Investigation:

“The Safety Committee shall establish procedures for investigating all safety-related incidents including injury accidents, illnesses, and deaths. This rule shall not be construed to require the committee to conduct the investigations.”

#### 3. OAR 437-001-0700 Reporting Fatalities and Hospitalizations to Oregon OSHA:

Employers are responsible to notify Oregon OSHA within 8 hours after occurrence or employer knowledge of workplace fatality or catastrophe, and within 24 hours of an injury resulting in overnight or longer hospital admission.

### C. DEFINITIONS

**Accident** - An unplanned event that results in personal injury or property damage.

**Catastrophe** - An accident in which two or more employees are fatally injured, or three or more employees are admitted to a hospital or equivalent medical facility.

**First Aid** - Any one-time treatment and subsequent observation of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care. Such one-time treatment and subsequent observation is considered first aid even though provided by a physician or registered professional personnel.

**Incident** – An occurrence of an action or situation. Typically distinguished from an accident by the absence of medical treatment.

**Lost Workday Case** - An injury which involves days away from work or days of restricted work activity, or both.



**Medical Treatment** - Treatment administered by physicians or by registered professional persons under the standing orders of a physician. Medical treatment does not include first aid treatment (see above) even though provided by a physician or registered professional personnel, nor does it include treatment ordinarily considered diagnostic or prophylaxis.

**Near-Miss** - Any unplanned event which could potentially have resulted in personal injury or property damage but based upon "good fortune" did not.

**Occupational Illness** - Any abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. It includes acute and chronic illnesses or diseases which may be caused by inhalation, absorption, ingestion, or direct contact.

**Recordable Case** - Any occupational injuries or illnesses which result in:

- a. Fatality, regardless of the time between the injury and death or the length of the illness;
- b. Lost workday cases, other than fatalities, that prevent the employee from performing his/her normal assignment during any part of the employee's next regular, or any subsequent workday or shift; or
- c. Non-fatal cases, without lost workdays, which result in transfer to another job or termination of employment, or require medical treatment (other than first aid), or involve loss of consciousness or restriction of work or motion.

## D. GENERAL RESPONSIBILITIES

1. **Employer.** The employer is responsible to:

- a. Ensure that all reported injuries, illnesses, exposures, near-misses, or reports of property damage, are promptly investigated as to cause;
- b. Ensure that Accident Investigation Procedures, as described in this chapter, are carried out;
- c. Arrive at recommendations to reduce recurrence; and
- d. Ensure that corrective measures are implemented so as to reduce the likelihood of recurrence.

2. **City Central Safety & Wellness Committee.** The City Central Safety & Wellness Committee (Safety Committee) is responsible to review all written Accident Investigation Reports and associated recommendations and provide additional insight as to methods which might assist in reducing the incidence of recurrence.

3. **Employees.** Employees are responsible for:

- a. Reporting all job-related injuries or illnesses to your supervisor immediately, regardless of severity. In the case of serious injury, the reporting obligation may be deferred until circumstances reasonably permit a report to be made. Failure to report an on-the-job injury or illness may preclude or delay the payment of any benefits you may be eligible for, and could subject the City to fines and penalties.
- b. Following the Accident Investigation Procedures, as described in this chapter, and cooperating fully with all accident investigations.

## E. ACCIDENT REPORTING PROCEDURES

1. **Personal Injury.** The employee shall follow these procedures to report any injury, illness, near-miss, or any accident involving property damage, sustained in the scope of their employment.

- a. Report any accidents or incident to the employee's Supervisor immediately, regardless of severity.
  - b. Fill out the Accident/Incident Report form ([Appendix 1](#)) for all injuries for which no medical attention was sought (required no more than first aid), and for near misses. The Supervisor will fill out and sign the last section of the form, and submit it to Human Resources.
  - c. Complete the OR-OSHA 801 Form if medical attention is sought. Any time that the work-related condition requires the services of a medical provider, the employee is further required to complete a Workers' Compensation Claim Form 801. **The 801 must be filed with the Administrative Services Officer within two working days of the accident.**
  - d. Review the incident with the supervisor/manager. Any time an 801 form is filed, the Department Head and/or Supervisor will ensure that an Accident Investigation Report ([Appendix 2](#)) is completed. The Department Head, in conjunction with the Supervisor, will determine who is responsible to conduct the Accident Investigation and complete the report. A team approach is recommended when conducting accident investigations when very serious injuries or fatalities are involved. The team might include an employer representative, an employee representative, and/or a member of the Safety Committee. Copies of the Accident Investigation form will be submitted to the: Department Head, and Administrative Services Officer for the Safety Committee.
2. **Fatalities & Catastrophes.** The City Manager or designee is required to report all work place fatalities and catastrophes to OR-OSHA within eight hours of knowledge at OR-OSHA's central office at **503-378-3272** or **1-800-922-2689** or by contacting the **Oregon Emergency Response System line at 503-378-6377 or 1-800-452-0311.**
- a. OR-OSHA requires that employers and their representatives not disturb the scene of a fatality or catastrophe, other than to conduct the rescue of an injured person, until authorized by the OR-OSHA Manager (or designee), or directed by a recognized law enforcement agency to do so.
  - b. Further, all employee injuries resulting in admission to a hospital also require notice to OR-OSHA within 24 hours of knowledge. Such notice will again be accomplished by the City Manager's office. If the incident occurs on a weekend or holiday, the Supervisor should contact either the City Manager, the Administrative Services Officer, or the City Attorney.
3. **Vehicular Accidents.** Any City employee who is involved in a motor vehicle accident while driving a City-owned vehicle, City-leased vehicle, or other vehicle being used on official City business, whether it is their fault or not, and whether the amount of damage is minor or not, should follow this procedure:
- a. STOP AT ONCE!! Check first for personal injuries and call or send for an ambulance if needed.
  - b. No vehicle shall be moved from the scene until the police arrive or photographs are taken, unless a greater hazard would be created by failure to remove the vehicle(s) from the scene.
  - c. Contact the Police and provide the following information: accident involves City employee and vehicle; location of accident; and name of caller.
  - d. Contact your Supervisor and provide the same information as in (c) above. The Supervisor should report to the scene of the accident as soon as possible and take photos of the accident if possible.
  - e. Write down what happened for future reference. Tactfully get the names and addresses of all the occupants of the other vehicle(s) and record this information on the City/County Insurance card in your

vehicle. Be sure to record the name and address of anyone who witnessed the accident and the name and badge number of the police officer if one was at the scene.

- f. The driver is responsible to complete the "Oregon Traffic Accident and Insurance Report" under the following conditions: (1) any vehicle has damage over \$1500; (2) any vehicle is towed from the scene as a result of damages; (3) damage to any one person's property is over \$1500; (4) injury (no matter how minor); or (5) death. The "Oregon Traffic Accident and Insurance Report" can be downloaded from the internet at: [www.oregon.gov/ODOT/DMB/forms/vehicle/shtml](http://www.oregon.gov/ODOT/DMB/forms/vehicle/shtml) or found in the Vehicle Packet. File the report with the Department of Motor Vehicles (DMV) within 72 hours of the accident or as soon as possible. A copy of the report must also be sent to the City Attorney.
- g. In the event of a vehicle accident, the driver of the City vehicle must report as soon as possible to a laboratory for a drug/alcohol screening per City policy or collective bargaining agreement, unless a supervisor with the requisite training has determined that substance use could not have contributed to the accident.
- h. Contact the Regulatory Specialist (966-0249) if you require assistance in arranging for the drug/alcohol screening. The following locations are available for drug/alcohol screening:
  - (1) During regular business hours, report to Blue Mt. Chiropractic, 424 SW 6th, Pendleton; request a non-DOT drug/alcohol screening.
  - (2) If Blue Mt. Chiropractic is not open, report to Interpath Labs, 1100 Southgate, Pendleton; request a non-DOT drug/alcohol screening.
  - (3) If neither Blue Mt. Chiropractic or Interpath Labs is open, report to St. Anthony Hospital, 1601 SE Court Ave.; request a non-DOT drug/alcohol screening through Interpath Labs.
- i. The Pendleton Police Department will investigate any vehicle accidents within the City. The OSP or other law enforcement agency with jurisdiction will be in charge of investigating vehicle accidents outside the City.

## F. ACCIDENT INVESTIGATION PROCEDURES

1. The City of Pendleton (City) will conduct an Accident Investigation (see Accident Investigation Report, [Appendix 2](#)) when one or more of the following are true:
  - a. The accident results in a workplace fatality or catastrophe;
  - b. Any injury to City personnel occurs that results in an OR-OSHA 801 report;
  - c. Damage to the property of another occurs that may result in a claim being made against the City;
  - d. Damage to City property, equipment or apparatus occurs and results in costs that exceed \$1000; or
  - e. Other incidents occur that the City Manager, Department Head, or Safety Committee find merit an investigation.
2. The basic steps for conducting an Accident Investigation are:
  - a. **Secure the accident scene**
    - (1) Ensure any necessary medical aid is rendered;
    - (2) Protect other workers and the public from any hazards present at the accident site;

- (3) Place barricades, barrier tape, etc. to identify the boundaries of the accident; and
- (4) Preserve the accident scene and any potential evidence.
- b. **Determine who should be notified of the accident.** This may include but is not limited to, the Supervisor, the Department Head, the Administrative Services Officer, and the victim's family.
- c. **Collect facts about what happened.** An Accident Investigator's Kit will simplify this process; see [Appendix 3](#) for suggested kit contents. For accidents involving serious injury or fatality, contact the Pendleton Police Department for assistance in the investigation.
  - (1) Take photographs from all angles.
  - (2) If possible, videotape the scene;
  - (3) Create sketches of the incident; see [Appendix 4](#) for Sketching Techniques;
  - (4) Take and record appropriate measurements and distances;
  - (5) Identify witnesses and take initial statements;
  - (6) Review documents, such as maintenance records, training records, standard operating procedures, safety policies, work schedules, disciplinary records, police reports, OSHA 801 form, and any other documents that might assist in understanding the underlying causes of the accident.
- d. **Conduct investigative interviews.** Interviews should occur as soon as possible after the incident. Remember, the purpose of the interview is to determine the cause of the accident, not to place blame.
  - (1) Determine who needs to be interviewed. This could include, but is not limited to, the following: the victim, witnesses, coworkers, the Supervisor, the Department Head, the safety trainer, maintenance personnel, emergency responders, medical personnel, the police, the victim's spouse and family, and other interested persons.
  - (2) Ask and obtain background information first, such as name, job, etc.
  - (3) See [Appendix 5](#), Interviewing Techniques and Skills, for tips on conducting an effective interview.
- e. **Be aware of the effects a serious injury or death may have on other employees.** Provide counseling for affected employees and information about services available through the Employee Assistant Program to all employees after a traumatic event.
- f. **Develop the sequence of events.** Utilize the information from steps "c" and "d" above to describe the sequence of events, both leading up to and including the accident. The sequence of events should clearly describe what occurred so that someone unfamiliar with the accident is able to "see it happen" as they read.
- g. **Determine the surface and root causes of the accident.** See [Appendix 6](#) for examples of potential surface and root causes. See Appendix 65 "OSHA Root Cause Incident Investigation Guide," for an additional helpful checklist to help determine root causes.
  - (1) Surface causes are things or objects that cause injury or illness. There may be primary (direct) and secondary (indirect) surface causes.
  - (2) Root causes are underlying safety system weaknesses.
- h. **Recommend corrective actions and improvements.**

- (1) Control strategies for surface causes include: engineering controls; work practice controls; administrative controls; and personal protective equipment (PPE).
- (2) Control strategies for root causes include improvements to policies, programs, plans, processes, training and procedures.

i. **Complete the Accident Investigation Report ([Appendix 2](#)).**

- (1) The Department Head in conjunction with the Supervisor will determine who is responsible to conduct the Accident Investigation and complete the Accident Investigation Report ([Appendix 2](#)). A team approach is recommended when conducting accident investigations when very serious injuries or fatalities are involved. The team might include an employer representative, an employee representative, and/or a member of the Safety Committee.
- (2) Copies of the Accident Investigation form will be submitted to: the Department Head, the Administrative Services Officer and the Safety Committee.
- (3) The Department Head and Supervisor are responsible to ensure that the necessary corrective action is taken to address the causes of the accident, injury, illness, or near-miss. Funds may be available through the City Manager's office for unbudgeted safety needs.
  - i. The Department Head and Supervisor are responsible to ensure that the necessary corrective action is taken to address the causes of the accident, injury, illness, or near-miss. Funds may be available through the City Manager's office for unbudgeted safety needs.

## CHAPTER 6: SAFETY COMMITTEE & SAFETY MEETINGS

### A. SAFETY POLICY STATEMENT

The City of Pendleton is committed to accident prevention in order to protect the safety and health of employees. Injury and illness due to hazards are needless, costly and preventable. To prevent these losses, a joint management/worker City Central Safety & Wellness Committee (Safety Committee) has been established. Employee involvement in accident prevention and support of Safety Committee members and activities is necessary to ensure a safe and healthful workplace.

### B. PURPOSE

The purpose of the Safety Committee is to bring workers and management together in a non-adversarial, cooperative effort to promote safety and health. Safety committees and safety meetings will assist you in making continuous improvement to your safety and health programs.

It is our policy for the Safety Committee and Safety Meetings to communicate and evaluate safety and health issues to assist with protecting the safety and health of all of our employees. Injuries and property loss from accidents are needless, costly, and preventable so we adhere to fundamental safety concepts that will help prevent injury and loss due to recognized hazards.

The Safety Committee's role is:

1. To maintain the interest of both management and labor in occupational safety and health matters;
2. To provide an opportunity for open discussion of problems that result or could result in injury or illness;
3. To assist management in the evaluation of recommendations for an improvement of the work environment; and
4. To improve the cooperative spirit among all employees of the City.

### C. Applicable Legal Standards

OR-OSHA OAR 437-001-0765 Safety Committees and Safety Meetings

### D. ORGANIZATION

The committee shall be composed of an equal number of employer-selected members and employee-elected or volunteer members. If both parties agree, the committee may have more employee-elected or volunteer members.

Employee members must represent major activities of our business. Employee members may be elected or volunteer from each union group. If no employee members are elected or volunteer, they shall be appointed. Management members shall be appointed.

Members of the Safety Committee must have an interest in accident prevention and occupational health and a willingness to work for improvement in this important City-wide effort.

Safety Committee meetings must include all committee members and include at least one employer representative authorized to ensure correction of safety and health issues. Safety Committee meetings must be held on company time with attendees paid at their regular rate of pay. An employer who has 10 or fewer employees can hold Safety Meetings in lieu of having a Safety Committee.

The Safety Committee will meet monthly at a consistent location. The Safety Committee will meet monthly on company time. Employee representatives will serve a continuous term of at least one (1) year.

## **E. SAFETY COMMITTEE GOALS AND DUTIES**

Safety Committee goals include the following:

1. Work with management to establish, amend or adopt accident investigation procedures that will identify and correct hazards.
2. Have a system that allows employees an opportunity to report hazards and safety- and health-related suggestions.
3. Establish procedures for reviewing inspection reports and for making recommendations to management.
4. Evaluate all accident and incident investigations and make recommendations for ways to prevent similar events from occurring.
5. Make Safety Committee meeting minutes available for all employees to review.
6. Evaluate management's accountability system for safety and health and recommend improvements. Examples include use of incentives, discipline, and evaluating success in controlling safety and health hazards.

## **F. EXTENT OF AUTHORITY**

It must be clearly understood that recommendations are expected from the

Safety Committee and that management will give serious consideration to all recommendations. This is not a policy-making committee.

The Safety Committee or its members should not interfere with the work of employees or with the condition of the department or challenge supervisory authority.

## **G. MEETING CONDUCT**

Minutes shall be made of each meeting which the Administrator shall maintain for a period of three years for inspection by OR-OSHA. The minutes will be kept in the Administration files. Copies of the meeting minutes shall be given to all committee members, the Administrator, and additionally made available to all employees through posting on the appropriate bulletin boards. The minutes for each meeting should include the following:

1. A record of who attended the meeting.
2. Meeting date.
3. All safety and health issues discussed, including tools, equipment, work environment, and work practice hazards.
4. Recommendations for corrective action and a reasonable date by which management agrees to respond.
5. Person responsible for follow-up on any recommended corrective actions.
6. All reports, evaluations, and recommendations made by the committee.

## **H. EDUCATION AND TRAINING**

Training of Safety Committee members is essential to the successful operation of the committee.

The more knowledge and expertise Safety Committee members have, the more effectively they will fulfill their objectives. Training content will include, but is not limited to, the following:

1. Safety Committee participation;
2. Rules for Workplace Safety Committees, Oregon Administrative Rules (OAR) 437-001-0765;
3. Workplace hazard identification;
4. Application of the Oregon Occupational Safety and Health Division rules; and
5. Accident/incident investigation techniques and reporting.



# CHAPTER 7: EMERGENCY ACTION, FIRE PREVENTION PLAN, AND FIRST AID

## A. POLICY

We have adopted this Emergency Action and Fire Prevention Plan to assist in preventing an emergency from occurring and, if an emergency does occur, to minimize the impact on our staff and the public using our facilities. This plan is supported by emergency escape route maps that are posted in each of our facilities. Our main responder in all emergencies is the Pendleton Fire Department.

## B. APPLICABLE LEGAL STANDARDS

The following Oregon OSHA standards apply to emergency and fire prevention plans and actions:

- Emergency Action & Fire Prevention Plans OAR 437-002-0042 to 0043 (29 CFR 1910.38) (OAR Division 2, Subdivision E)
- Means of Egress - Exiting OAR 437-002-0041 to 0043 (29 CFR 1910.37 to 1910.38) (OAR Division 2, Subdivision E)
- Fire Protection 29 CFR 1910.155 to 1910.165 (OAR Division 2, Subdivision L)
- Hazardous Materials Emergency Response 29 CFR 1910.120 (OAR Division 2, Subdivision H)
- Medical and First Aid OAR 437-002-0161 (OAR Division 2, Subdivision K)

## C. DEFINITIONS

The following are Oregon OSHA definitions that are key to understanding the legal requirements for this plan.

**Emergency Action Plan:** means a plan for a workplace describing what procedures the employer and employees must take to ensure employee safety from fire or other emergencies.

**Emergency Escape Route:** means the route that employees are directed to follow in the event they are required to evacuate the workplace or seek a designated refuge area.

**Exit Access:** is a means of egress which leads to an entrance or exit.

**Exit:** is that portion of means of egress which is separated from all other spaces of the building or structure by construction or equipment as required in the rules to provide a protected way of travel to the exit.

**Fire Protection System:** This includes fire extinguishers and automatic fire sprinkler systems.

**Incipient Stage Fire:** A fire which is in the initial or beginning stage and can be controlled or extinguished by portable fire extinguishers without the need for protective clothing or breathing apparatus.

**Fire Inspection:** A visual check of fire protection systems and equipment to ensure that they are in place, charged, and ready for use in the event of fire.

**Maintenance:** The performance of services on fire protection equipment and systems to assure that they will perform as expected in the event of a fire. Maintenance differs from inspection in that maintenance requires the checking of internal fittings, and devices.

## **D. RESPONSIBILITIES**

1. The employer is responsible to ensure that all employees are trained and informed about this Emergency Action Plan. Employees will be updated when the plan changes.
2. The employer will ensure that the proper safeguards, fire protection systems, fire equipment, first aid kits and equipment, eyewash stations and showers, and PPE are available and properly maintained.
3. The Supervisor, or designee, at each facility is responsible to:
  - a. Assess the situation and determine if the Emergency Action Plan should be implemented;
  - b. Direct the evacuation of personnel;
  - c. Make sure that Management and the appropriate outside emergency services have been notified;
  - d. Direct the shutdown of operations when necessary; and
  - e. Account for personnel involved in the incident including outside contractors and visitors to our facilities.
4. Employees are responsible to follow the rules of this plan and to notify their Supervisor if they need additional training.

## **E. POTENTIAL EMERGENCIES**

The following are the main types of potential emergencies at our facilities:

- Fire
- Chemical Spills or Releases
- Medical Emergency due to an accident or illness
- Bomb Threat or Explosion
- Violence
- Environmental Emergency: Wind storm, Flood, Earthquake, Tsunami, or Earthquake
- Excavation, Confined Space, or Entrapment

## **F. GENERAL PROCEDURES**

1. IN CASE OF EMERGENCY—DIAL 9-1-1. (Note: From City phones dial 9 – 911)
2. Provide the dispatcher with the following information:
  - a. What is the location of the emergency?
  - b. What is the nature of the emergency? (fire, chemical spill or release, medical emergency, bomb threat, violence, environmental, excavation, confined space, entrapment, etc.)
  - c. How many people are involved?
  - d. Are there other special hazards to be considered? (electrical hazard, hazardous atmosphere, potential engulfment, etc.)

3. All losses, including fire, explosion, windstorm, flood damage, electrical, etc., shall be reported to the Supervisor or Department Head as soon as practical.
4. The type of immediate action necessary is based on the nature of the emergency.
  - a. For an immediate total site evacuation, employees and public are to leave by using the nearest exit. Refer to emergency escape route maps which are posted at each facility.
  - b. For a non-immediate emergency evacuation, employees and public will be given instructions by the Supervisor or designee on how to proceed.
  - c. Supervisors or most senior person on site, will account for the employees or public in their work areas after an evacuation. If a person is missing, the information will be communicated to the outside emergency responders.
  - d. Neither our employees, except emergency responders, nor the public are to re-enter any facility that has been evacuated due to an emergency until directed to do so by the Supervisor or emergency responders.
  - e. No one is to leave the evacuation area site unless instructed by the Supervisor or emergency responders. The exception to this if there exists imminent danger to employees.
5. Supervisors and trained personnel are responsible to ensure that critical operations are shut down before they evacuate ***if it can be done without harm to the individual***. Those operations could include the following depending on the emergency:
  - a. Isolating power to equipment which is on fire or related to the emergency. Employees expected to terminate power in emergency situations will be trained on how to do so safely.
  - b. Turning off a motor if it is on fire. **NEVER SPRAY WATER ON LIVE ELECTRICAL CONNECTIONS OR MOTORS.**

## G. CHEMICAL SPILLS

1. For chemical spills, our responders will initiate a defensive action to contain the spill from migrating. Depending on the nature of the chemical and extent of the spill, the immediate employees may clean-up the spill or call in the Fire Department.
2. No employee is to perform hazardous chemical clean-up duties that he/she is not trained in or does not have the appropriate personal protective equipment for.

## H. FIRE PROTECTION PLAN

The following procedures relate directly to fire protection and fire response actions.

1. The fire protection system is the responsibility of each department.
2. In case of fire, immediately implement fire control action and clear all non-essential personnel and public from the area.
3. Proper maintenance of equipment and systems installed on heat-producing equipment will be performed to prevent accidental ignition of combustible materials in accordance with established procedures.

4. Fire extinguishers are to be distributed in sufficient locations so that the actual travel distance employees must walk to reach an extinguisher (i.e. around partitions, through doorways and aisle ways) is generally not greater than 50 feet. Exception: For areas where there is a potential for a fire involving combustible cooking material (class K fires), fire extinguishers will be within 30 feet.
  - a. Fire extinguishers are to be checked/initialed monthly and maintained annually.
    - (1) Annual maintenance includes inspecting and/or testing external and internal parts, checking the quantity and quality of the contents and assuring operational capability. The inspection date and initials of the person performing this inspection will be recorded on a tag attached to the extinguisher.
    - (2) A qualified person must do the annual maintenance check. Persons deemed qualified by the Oregon Office of State Fire Marshal or local fire authorities will do the annual maintenance checks.
    - (3) Keep a record of the maintenance check until a new check record replaces it. This record will be available to OR-OSHA on request.
    - (4) Replacement extinguishers will be provided or some other method of coverage will be used for the affected area while extinguishers are out of service for the maintenance check.
    - (5) The inspection date and the initials of the person performing this inspection will be recorded on a tag attached to the extinguisher.
  - b. Any extinguisher that is not fully operable will be removed and replaced.
  - c. Internal examinations of fire extinguishers will be done at intervals not longer than the requirements set in Table 2 of the OSHA Standard 437-002-0187 Portable Fire Extinguishers or when the extinguisher shows corrosion or physical damage. The inspection date and initials of the person performing this inspection will be recorded on a tag attached to the extinguisher.
  - d. Stored pressure dry chemical extinguishers require a 12-year hydrostatic test and are subject to maintenance every 6 years. Most other types of fire extinguishers are hydrotested every 5 years.
  - e. Non-rechargeable extinguishers are good for 12 years from the date of manufacture and then will be taken out of service.
  - f. Fire extinguishers will be selected on the basis of the classes of anticipated fires.
    - (1) Class A Fire: Ordinary combustible materials (paper, wood, cloth, some rubber and plastics)
    - (2) Class B Fire: Flammable or combustible liquids and gases, greases and similar materials and some rubber and plastics.
    - (3) Class C Fire: Energized electrical equipment where safety of the employee requires use of electrically non-conductive extinguishing media such as carbon dioxide or dry chemical.
    - (4) Class D Fire: Combustible metals
    - (5) Multipurpose, dry chemical extinguishers designated ABC are approved for use on Class A, B, and C fires.
5. All **fire exits** will be visibly marked with signs and kept accessible at all times.
  - a. All fire exits will be unlocked from the inside to allow for quick exiting.

- b. All non-exits which could be mistaken for an exit will be marked with a sign stating "Not an Exit" to reduce confusion should an evacuation be needed.
6. Hot Work (such as welding and cutting)
- a. Before cutting or welding is permitted, the area shall be inspected by the Supervisor or designee who will designate any additional precautions to be followed.
  - b. If the object to be welded or cut cannot be readily moved, all movable fire hazards in the vicinity shall be taken to a safe place.
  - c. If the object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards shall be used to confine the heat, sparks, and slag.
  - d. Suitable fire extinguishing equipment shall be maintained in a state of readiness for instant use.
  - e. Fire watchers shall be required whenever welding or cutting is performed in locations where other than a minor fire might develop or appreciable combustible material is within 35 feet or can be easily ignited by sparks.

## I. FIRST AID FOR MEDICAL EMERGENCIES

First-aid trained personnel are not required at every place of employment. Our Emergency Medical Plan identifies the Pendleton Fire Department as the first responder.

If local outside services are not available, or response times are not considered satisfactory, a qualified first-aid person(s) must be available.

### 1. Emergency Number Posting

The emergency telephone number - 911 - shall be posted next to every phone. The names of first-aid/CPR trained personnel at the facility are to be posted on the facility bulletin boards.

### 2. First-Aid Supplies

- a. The employer shall provide OSHA-approved first aid supplies based upon the number of employees, intended use and types of injuries that could occur at the place of employment.
- b. The first aid supplies shall be available in close proximity to all employees and available for each shift.
- c. First aid supplies must be stored in containers adequate to protect the contents from damage, deterioration, or contamination. The container shall be clearly marked, available when needed and must not be locked, but may be sealed.

### 3. Personal Protective Equipment

- a. Supervisors will ensure that employees are provided appropriate personal protective equipment to respond to a blood or other body fluids. This may include: disposable latex gloves; disposable safety goggles; disposable microshield with one-way valves for use in giving CPR; and a biohazard bag.

- b. Sharps containers shall be located in appropriate locations within our facilities and in certain designated vehicles. Sharps containers shall be discarded at Pendleton Fire Station 1 and replaced as needed.
  - c. Refer to the City's Bloodborne Pathogen Exposure Control Plan (Safety Manual Chapter 8) for more information about handling blood and other body fluids. Bloodborne Pathogen response packets are to be maintained in all city vehicles.
4. Emergency Eyewash and Shower Facilities
- a. Where employees handle substances that could injure them by getting into their eyes or onto their bodies, the employer will provide them with an eyewash or shower or both, based upon the hazard.
  - b. An emergency eyewash and/or shower facility must be located so that employees can reach it and begin treatment in 10 seconds or less. The path to the equipment must be unobstructed.
  - c. The water must flow for at least 15 minutes. The eyewash must have valves that stay open without the use of the hands. The shower must not be subject to unauthorized shut-off.
  - d. Emergency shower and eyewash facilities must be clean, sanitary and operating correctly and checked weekly.

## J. FIRST AID RESPONSE/EMERGENCY MEDICAL PLAN

In case of an accident, injury or other incident requiring first aid or medical attention, employees should follow these steps:

1. Assess the situation to determine if basic in-house first aid is adequate or if more advanced medical attention is necessary.
2. **IN CASE OF EMERGENCY—On city phones DIAL 9-9-1-1.**  
**Other phones DIAL 9-1-1.** Provide the dispatcher with the following information:
  - a. What is the location of the emergency?
  - b. What is the nature of the emergency? (fire, chemical spill or release, medical emergency, bomb threat, violence, environmental, excavation, confined space, entrapment, etc.)
  - c. How many people are involved?
  - d. Are there other special hazards to be considered? (electrical hazard, hazardous atmosphere, potential engulfment, etc.)
3. Employees may perform first aid for minor incidents or to stabilize the situation until the first aid responders (Pendleton Fire Department) arrive.
4. Employees who perform first aid as a "Good Samaritan Act" may administer first aid to the level of their ability and training.
5. Employees who administer first aid should:
  - a. Follow Universal Precautions (Chapter 8, Section D);

- b. Wear PPE as appropriate to the situation (Chapter 8, Section E);
- c. Follow housekeeping requirements (Chapter 8, Section G) and biohazard waste handling and disposal requirements (Chapter 8, Section H);
- c. Report all incidents to a Supervisor; and
- e. Report any exposure or potential exposure to blood or OPIM to a Supervisor immediately. (Chapter 8, Section J)

## K. EMPLOYEE TRAINING

1. Each employee must be trained in the Emergency and Fire Protection Plan when hired and every year thereafter. Additional training may be needed whenever the employee's responsibilities change and whenever the plan is changed.
2. Fire response training shall include, but is not limited to, the following:
  - a. Information on the types of fires, stages of fires, and reactions to fires and emergencies;
  - b. A discussion of the fire triangle and the three components (fuel, heat, and air) that must be present for a fire to ignite and burn;
  - c. A review of the four classes of fire extinguishers and basic operation and method of use of fire extinguishers;
  - d. A discussion on the dangers associated with a fire; and
  - e. The location of fire exits and emergency evacuation routes.
3. **Employees should limit fire-fighting to small, incipient fires.** Except for fire department personnel, employees will only be trained to use an extinguisher or, in some cases, the smaller fire hoses to put out an incipient fire. Employees are not trained in structural fire-fighting.
4. Every training session will emphasize employee safety and prevention of emergencies and fires.
5. Supervisors are responsible to ensure that their employees receive the proper training and to keep a record of the training.

# CHAPTER 8: BLOODBORNE PATHOGEN EXPOSURE CONTROL PLAN

## PURPOSE

The purpose of the Bloodborne Pathogen (BBP) Exposure Control Plan is to provide a written program that establishes minimum requirements and procedures necessary for the safety and health of employees who may be exposed to bloodborne pathogens in their work environment and to meet the requirements of 29 CFR 1910.1030 and OAR 437-002(Z) Toxic & Hazardous Substances: Bloodborne Pathogens, hereafter designated as § 1910.1030.

## OBJECTIVE

The primary objective is to protect employees from exposure and to provide post-exposure treatment, follow-up and investigation in the event that there is an exposure incident. This shall be accomplished as far as feasible by accepted engineering control measures, work practice controls, and by educating and training employees.

## POLICY

The City of Pendleton (City) shall identify and evaluate the bloodborne pathogen exposure hazards of the workplace.

## POLICY APPLICATION

This policy shall apply to all City employees.

## EXPOSURE DETERMINATION

The OSHA Bloodborne Pathogen standard applies to all employees whose job duties result in exposure to human blood or other potentially infectious material (OPIM). Oregon OSHA defines occupational exposure as meaning reasonably anticipated (reasonably expected) skin, eye, mucous membrane, or piercing of the skin contact with blood or OPIM that may result from the performance of an employee's duties.

The following job classifications have been determined to have routine exposure to blood and/or body fluids. This decision is based on the exposure determination as to which employees may incur occupational exposure to blood or OPIM. This determination was made without regard to the use of personal protective equipment.

1. Public Works employees who may be exposed to domestic sewage in the wastewater collection system and at the Resource Recovery Center.
2. Designated employees in other departments, including, but not limited to, the following:
  - Fire & Ambulance Department
  - Police Department
  - Parks and Recreation
  - Facilities
3. Other  
Employees who perform first aid as a "Good Samaritan Act" and not as an assigned responsibility maybe offered training, but are not required to render medical assistance. These employees will not be part of the pre-exposure Hepatitis B vaccinations. Any workplace exposure incident will be treated as listed in this plan's medical response section.

First aid kits and supplies are found in various locations in City facilities and buildings. These kits provide basic first aid supplies.



## A. DEFINITIONS

1. **Bloodborne Pathogens** - Means any pathogenic microorganisms that are present in human blood and certain other body fluids and can cause disease in humans. These pathogens include, but are not limited to, Hepatitis B Virus (HBV), Hepatitis C Virus (HCV) and Human Immunodeficiency Virus (HIV).
2. **HEPATITIS B and C VIRUS (HBV and HCV)** are viral infections of the liver and are spread through sexual contact, blood transfusions, contaminated needles, and contact with body fluids on non-intact skin and mucous membranes.
3. **HUMAN IMMUNODEFICIENCY VIRUS (HIV)** is the virus that can cause Acquired Immune Deficiency Syndrome (AIDS) and is spread in the same manner as HBV or HCV.
4. **Exposure Incident** - Means a specific eye, mouth, other mucous membrane, non-intact skin, or skin piercing contact with blood or other potentially infectious materials that is the result of the performance of an employee's duties.
5. **Other Potentially Infectious Materials (OPIM)** – any human body fluid, including, but not limited to, the following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, or saliva in dental procedures.
6. **Universal Precautions** – an approach to infection control in which all blood and body fluids are treated as if known to be infectious. Universal Precautions are a set of protocols that are recommended by the Center for Disease Control and Prevention and now required by OSHA to prevent skin and mucous membrane exposure when potential contact with blood or body fluids is anticipated.
7. **Exposure Control Officer (ECO)** – a technical expert in the operations and administration of an exposure control program for the City of Pendleton. The ECO investigates and evaluates the exposure incident, directs the appropriate actions and monitors all follow-up treatment based on applicable City regulations and protocols and Federal, State and local laws and regulations. The Assistant Fire Chief is the designated ECO for City employees and members of the Fire Department. The Police department has a designated ECO that oversees the Police Department Exposure Control Plan.

## B. OVERALL RESPONSIBILITIES

1. The following exposure control plan has been developed in compliance with the OSHA standard.
2. It shall be each employee's responsibility to follow the rules of this plan.
3. This policy is in the Safety Manual, which is located on the computer shared drive, on the City's website, at each major worksite and will be on file in the office of the Administrative Services/HR.
4. It is City policy that all affected employees will be trained in the BBP Exposure Control Plan. The training required by the BBP Exposure Control Plan will be arranged or coordinated through your Supervisor.
5. The training will occur at the time of initial assignment and annually thereafter for all covered staff. The training is to be documented and a written record kept in the employee's training file for at least 3 years.
6. Each department will be responsible to:
  - a. Coordinate, assist, and provide resources to ensure Hepatitis B vaccinations are offered and records are maintained; and
  - b. Coordinate with the supervisor exposure incident investigations and appropriate medical treatment and follow-up. Exposure/Incident records will be maintained by the Administrative Services Officer/HR as confidential.
7. Supervisors will ensure that appropriate equipment is provided to employees to protect against contact with blood or OPIM, which includes:
  - a. Placement of first aid kits and infection control materials in all vehicles; and
  - b. Appropriate personal protective equipment (PPE).

8. Employees will be responsible to:
  - a. Follow the BBP Exposure Control Plan;
  - b. Notify the supervisor when he/she feels sufficient training has not been provided or when refresher information is needed;
  - c. Maintain PPE (Section E.) and notify the supervisor when replacement or repairs are needed; and
  - d. Follow housekeeping requirements (Section G.) and biohazard waste handling and disposal procedures (Section H.).

### C. UNIVERSAL PRECAUTIONS

Any employee who may be exposed to blood or OPIM through the performance of duties and an employee who performs first aid as a "Good Samaritan Act" must use Universal Precautions.

Universal Precautions means: **TREAT ALL BLOOD OR BODY FLUIDS AS IF THEY ARE POTENTIALLY INFECTIOUS.**

Universal Precautions specifically include:

1. Special care and precautions shall be taken any time an employee may have open cuts, sores, or dermatitis that may compromise the barrier of protection provided by the skin. Bandage any cut, wound or break in the skin with watertight bandages to preclude contact with blood or body fluids.
2. Wash hands thoroughly with soap and water for at least 10-20 seconds after contact with blood or body fluid or handling contaminated articles. This procedure should be done even after wearing gloves.
3. Wear personal protective equipment (PPE) as necessary to protect eyes and mucous membranes from potential exposure.
4. Eating, drinking, smoking, chewing tobacco, application of cosmetics or lip balm, and handling of contact lenses are prohibited in work areas with reasonable likelihood of exposure to blood or OPIM.
5. Food and drink shall not be stored in refrigerators, freezers, cabinets, or other storage areas where blood, body fluids, or other potentially infectious materials are present.
6. Specific work practices involving potentially infectious materials shall be performed in such a manner as to minimize splashing, spraying, spattering, and generation of droplets of these substances.
7. The following procedures need to be used when washing hands/body as part of our universal precaution measures:
  - a. Wash gloves with soap and water before removing them. Washing only helps reduce the risk of contracting blood/body fluids when removing the gloves.
  - b. Pull glove from skin using outer top part of glove so the other glove does not contact the skin. To pull off the glove with the other ungloved hand place your fingers at the top interior of the glove and pull off the glove.
  - c. Hands should be washed as soon as possible after removing gloves. Wash hands after removal of gloves or after contact with body fluids. If water is not immediately available, then alcohol or antiseptic towelettes or hand sanitizer may be used.
  - d. Follow same procedures for non-disposable gloves but ensure thorough decontamination prior to removal. Allow the gloves to dry and store gloves so that they do not degrade or become contaminated.
  - e. Use soap and warm water. Hot water removes oil from the skin.
  - f. Rub your hands vigorously. Friction by rotary motion and rinsing under running water aids in the mechanical removal of bacteria.

- g. Wash all surfaces, including: back of hands, wrists, forearms, between fingers, and under fingernails. Your hands should be washed well for 10 to 20 seconds.
- h. Rinse well.
- i. Dry hands with paper towel.
- j. Turn off the water using a paper towel instead of bare hands because the faucet handles may be contaminated.
- k. Full showering should be done as soon as possible if body contamination occurred.

#### D. PERSONAL PROTECTIVE EQUIPMENT

Engineering and work place practice controls shall be used to eliminate or minimize employee exposure. Where potential for occupational exposure remains after the institution of these controls, personal protective equipment (PPE) shall be worn.

1. The Supervisor will ensure that employees are provided appropriate PPE and trained in the use of the PPE. The employee will maintain the PPE and notify the supervisor when replacement or repairs are needed.
2. Gloves must be worn when there is reasonable expectation that the employee may be exposed to blood or OPIM or when handling items or surfaces obviously soiled with blood or body fluids.
3. Gloves should be changed after contact. Gloves must be discarded if they are cracked, peelings, torn, punctured, or exhibit other signs of deterioration or when their ability to function as a barrier is compromised.
4. Face and Eye Protection is used to protect the eyes and mucous membranes from exposure to blood and OPIM. Types of face and eye protection include goggles, safety glasses, and face shields. The items need to be cleaned and maintained in good repair by the employee. They should be discarded if they are broken or when their ability to function as a barrier is compromised. When possible, return the item to the Supervisor for replacement.
5. Appropriate protective clothing such as, but not limited to, coveralls, must be worn when there is reasonable expectation that the employee may be exposed to blood or OPIM.
6. Employees shall use a mouth guard (Microshield) when performing CPR.
7. When picking up sharps (such as hypodermic needles) and broken contaminated glass, employees need to wear latex gloves and use tongs, rather than unprotected fingers.
8. Sharps containers shall be located in the appropriate locations within our facilities and vehicles. Sharps containers shall be clearly labeled "Biohazard" and be red in color. Sharps containers shall be taken to the Fire Department when they are full or contact the Facilities Department to dispose of and replace with a new container.
9. Remember that all PPE has limitations. **Do not use damaged PPE.**

#### E. FIRST AID RESPONSE/EMERGENCY MEDICAL PLAN

In case of an accident, injury or other incident requiring first aid or medical attention, employees should follow these steps:

1. Assess the situation to determine if basic in-house first aid is adequate or if more advanced medical attention is necessary.
2. IN CASE OF EMERGENCY—DIAL 9-1-1.  
Provide the dispatcher with the following information:
  - a. What is the location of the emergency?

- b. What is the nature of the emergency? (fire, chemical spill or release, medical emergency, bomb threat, violence, environmental, excavation, confined space, entrapment, etc.)
  - c. How many people are involved?
  - d. Are there other special hazards to be considered? (electrical hazard, hazardous atmosphere, potential engulfment, etc.)
3. Employees may perform first aid for minor incidents or to stabilize the situation until the first aid responders (Pendleton Fire & Ambulance Department) arrive.
  4. Employees who perform first aid as a “Good Samaritan Act” may administer first aid to the level of their ability, comfort, and training.
  5. Employees who administer first aid should:
    - a. Follow Universal Precautions (Section D);
    - b. Wear PPE as appropriate to the situation (Section E);
    - c. Follow housekeeping requirements (Section G) and biohazard waste handling and disposal requirements (Section H);
    - d. Report all incidents to a Supervisor; and
    - e. Report any exposure or potential exposure to blood or OPIM to a Supervisor immediately. (Section K)

## F. HOUSEKEEPING REQUIREMENTS

1. Clean up of blood or body fluids shall be done as soon as possible. Hepatitis B virus (HBV) can survive for at least a week in a dried state at room temperature on work surfaces. HIV survival is less - 24 to 48 hours.
  - a. Wear proper PPE when cleaning up blood or body fluids.
  - b. Use basic cleaning products and disinfectants. Follow product use instructions for proper dilution and application. If commercial disinfectants are not available, fresh bleach solution can be made and is effective. A 1:100 dilution of common household bleach (approximately 1/4 cup bleach per gallon of tap water) is effective. The bleach solution must be made fresh each day.
2. Disposable latex or vinyl gloves or clothes should be disposed of in the regular trash after use unless soaked with blood or OPIM, in which case they will be treated as a biohazard.
3. Utility gloves may be decontaminated for re-use if the integrity of the glove is not compromised. They should be cleaned thoroughly with soap and water after use. (Section E)
4. Goggles (that are not disposable), safety glasses and safety shields should be cleaned with soap and water and then wiped down with alcohol or other germicides if contaminated with blood or OPIM.
5. Contaminated tools and equipment should be washed with soap and water and then wiped down with bleach, alcohol or other germicides. Wear protective gloves and other appropriate PPE when cleaning tools and equipment.
6. All garments that are penetrated by blood or body fluids should be removed immediately or as soon as possible. Wear protective gloves and other appropriate PPE when handling contaminated laundry.
7. Laundry contaminated with blood or OPIM shall be handled as little as possible.
8. Laundering of contaminated articles of clothing will be done as follows:
  - a. Contaminated coveralls or pants that are provided by the City will be placed in the Biohazard bag located at the facility and will be transported off-site in the bag for laundering by a private vendor.

- b. Personal clothing that is contaminated will be washed and dried by the employee at the work site in the washer/dryer provided for this specific purpose. Washer/dryers are available at the Fire Department, RRF and at the Lower Yard at the Public Works Shop.
9. If an area becomes contaminated with blood or OPIM, it will be cleaned with soap and water and then wiped down with bleach or other germicide. Wear protective gloves and other appropriate PPE when cleaning.
10. All materials contaminated with blood or OPIM will be pickup up, bagged and labeled as Biohazard. Biohazard bags are predominantly fluorescent orange or red with the lettering and symbols in a contrasting color. The Biohazard symbol is shown below.



## G. BIOHAZARD WASTE HANDLING/DISPOSAL PROCEDURES

A biohazard waste which requires special handling and disposal is defined as "any liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other infectious materials and are capable of releasing these materials during handling". All such materials shall be disposed of immediately in the proper containers.

The following procedures should be followed when encountering biohazard material:

1. Blood and other body fluids can be disposed of down the sanitary sewer in Oregon.
2. Sharps (syringes) are considered a biohazard. Sharps - including blood contaminated utility knives or broken glass - that are found shall be disposed of in a closeable, puncture resistant, disposable sharps container that is labeled and color-coded red. Biohazard containers or bags must be able to contain all contents and prevent leakage of fluids during handling, storage, transport, or shipping.
3. Procedures for picking-up sharps:
  - a. Have sharps container ready.
  - b. Use latex or vinyl gloves.
  - c. Use mechanical equipment (tongs, pliers, shovels, or dustpans) to pick up sharps.
  - d. Be sure sharps container is closed to prevent spillage during handling, storage, and transport.
  - e. When sharps container is full, take container to Supervisor for disposal.
4. Materials in a Biohazard or Sharps container that require disposal will be taken to the Supervisor for proper disposal.
5. Pendleton Fire & Ambulance Department will accept Sharps containers and Biohazard materials that are correctly labeled and will be responsible for properly disposing of the Biohazard waste.

## H. HEPATITIS B VIRUS (HBV) VACCINATION

1. All employees listed under the Exposure Determination are eligible to obtain the Hepatitis B vaccination (HBV) series at no cost to the employee and during normal working hours. First Aid providers, as incidental to the employee's job duties, are not provided HBV vaccinations unless there is a workplace exposure incident.

2. Identified employees will be provided with information about the HBV series and offered the HBV series within 10 working days of initial assignment. Employees will be required to return a signed form to the City indicating whether they want the HBV series, decline the HBV series (sign required OSHA waiver), or have already had the HBV series. (See [Appendix 7](#)) If the employee declines the HBV series, he/she may change his/her mind at any time, and the HBV series will be made available.
3. Any employee who has a workplace exposure is covered by the Exposure Incident Evaluation & Follow-Up provisions of this plan. If they have not previously taken the HBV series, they will be urged to be vaccinated immediately.
4. If a routine booster of Hepatitis B vaccine is recommended by the U.S. Public Health Service at a future date, such booster will be made available to all affected employees.

## I. EXPOSURE INCIDENT EVALUATION & FOLLOW UP

An exposure incident is "unprotected exposure to blood or other body fluids including a skin exposure involving contact with blood, especially when the exposed skin is chapped, abraded, or afflicted with dermatitis, or a needle/sharp exposure to blood or body fluids during the course of work." (Small splashes of blood on intact skin is NOT usually classed as an exposure incident.)

1. Any employee who has an exposure incident should wash the affected area with soap and water or flush eyes or mucous membranes with water immediately or as soon as feasible following contact of such body areas with blood or OPIM.
2. Any employee who has an exposure incident shall **immediately notify a Supervisor**. Employee and Supervisor will complete the BBP Exposure Incident/Accident Report form. ([Appendix 8](#))
3. Medical treatment will be sought as soon as practical and preferably within 24 hours of the incident. The employee has the right to his/her private physician or may choose to go to a local health care facility for a confidential medical evaluation and follow up. Information is an important part of treatment, so any information, such as the source person or the employee's medical condition and vaccination status, should be documented.
  - a. The exposed employee's blood shall be collected as soon as feasible and tested after consent is obtained.
  - b. The sample shall be analyzed as soon as possible unless the employee does not give consent at that time for HIV serologic testing. In that case, the sample shall be preserved for at least 90 days. If within 90 days of the exposure incident, the employee elects to have the sample tested, such testing will be done as soon as feasible.
  - c. Results of the testing shall be made available to the exposed employee as soon as possible.
  - d. Additional follow-up testing shall be offered based on U.S. Public Health Service recommended schedule and the attending physician's clinical experience.
4. If the source individual has been identified, documentation of the source will be completed.
  - a. The source individual's blood shall be tested as soon as feasible and after consent is obtained for Hepatitis B and antibody HIV. It will not always be possible to obtain consent, but every attempt shall be made to test the source individual's blood. The arrangement to obtain consent and testing will be performed by the Exposure Control Officer in conjunction with hospital, coroner, and/or treating physician. The physician or clinic will provide the consent form.
  - b. Results of the source individual's testing shall be made available to the exposed employee, and the employee shall be informed of applicable laws and regulations concerning disclosure of the identity of the infectious status of the source individual. This will be done by the physician or health care professional treating the employee or the Exposure Control Officer.
5. If the exposed employee has not previously taken the HBV series, he/she will be urged to be vaccinated immediately. If the employee declines to be vaccinated after an exposure incident, a signed

form indicating the employee's choice will be required. ([Appendix 7](#)) An exception will be made if the employee can provide documentation of having previously received the complete HBV series and/or antibody testing shows that the employee is immune and/or the vaccine is contraindicated for medical reasons.

6. The City will provide the treating physician or healthcare provider with:
  - a. A copy of the Bloodborne Pathogen rule, 1910.1030.
  - b. A copy of the BBP Exposure Incident/Accident report. ([Appendix 8](#))
  - c. Any medical records on the exposed employee regarding HBV vaccine status.
  - d. The Healthcare Professional's Written Opinion for Post-Exposure Evaluation and Follow-Up form ([Appendix 9](#)).
7. The physician or health care provider will provide the employee with a written opinion of the medical evaluation. Results of the tests given the employee will be confidential.
8. Employees will incur no cost for the medical evaluations, HBV series, medical procedures, post-exposure follow-up, or laboratory tests. All procedures will be under the supervision of a licensed physician or health care provider and will follow the U.S. Public Health Service recommendations.
9. Bloodborne Pathogen "Packets" containing a checklist of procedures and all the required forms listed above will be provided to the Departments designated in this chapter as having routine exposure to blood and/or body fluids.

## J. POST EXPOSURE INVESTIGATION

As part of the follow-up on an exposure incident, the Safety Committee may conduct an investigation. The following steps are to be taken as part of the post exposure investigation:

1. Report the incident/accident immediately to your Supervisor. Complete the BBP Exposure Incident/Accident Report form to ensure that relevant information is recorded as soon as possible. The form documents information such as the routes of exposure, the activity in which the employee was engaged at the time of exposure, the extent to which appropriate work practices and PPE were used, and a description of the sources of exposure.
2. Supervisor will contact the Exposure Control Officer which will be responsible to ensure that the circumstances of exposure are recorded and investigated.

## K. RECORDKEEPING

1. Medical Records shall be established and maintained for each employee with occupational exposure. The Administrative Services Officer/HR will maintain the employee medical records during length of employment. City will keep the records for the length of time required by law. The record will be confidential and will contain the following information as required by the OSHA standard:
  - a. Name and social security number;
  - b. Copy of employee's vaccination status and any medical records that are relative to employee's ability to receive the vaccination;
  - c. Copy of the results of examinations, medical testing, and follow-up procedures as the result of a post-exposure incident medical treatment;
  - d. Copy of medical professional's written opinion; and
  - e. A copy of the information provided to the medical professional.
2. The employer shall ensure that employee medical records required under this Exposure Control Plan are kept confidential and cannot be disclosed to any person, within or outside the workplace, except as required by this section or required by law, without the affected employee's written consent. If disclosure is required by law, City will notify the employee if possible.

3. Training Records: Each department will maintain the training records for a minimum of 3 years. This includes:
  - a. Dates of the training sessions;
  - b. Contents or summary of the training;
  - c. Names and qualifications of the persons conducting the training; and
  - d. The names and job titles of all persons attending training sessions.
4. Sharps Injury Log
  4. The employer shall establish and maintain a sharps injury log for the recording of percutaneous injuries from contaminated sharps. The information in the sharps injury log shall be recorded and maintained in such a manner as to protect the confidentiality of the injured employee. The sharps injury log shall contain at a minimum:
    - a. The type and brand of device involved in the incident;
    - b. The department or work area where the exposure incident occurred; and
    - c. An explanation of how the incident occurred.

## L. TRAINING AND COMMUNICATION

**The following is a list of the topics required to be covered in the Bloodborne Pathogen Program initial and annual training.**

1. An accessible copy of the bloodborne standard and an explanation of its contents;
2. A general explanation of the epidemiology and symptoms of bloodborne diseases;
3. An explanation of the modes of transmission of bloodborne pathogens;
4. An explanation of the employer's exposure control plan and the means by which the employee can obtain a copy of the written plan;
5. An explanation of the appropriate methods of recognizing tasks and other activities that may involve exposure to blood or other potentially infectious materials (OPIM);
6. An explanation on the use and limitation of methods that will prevent or reduce exposure including appropriate engineering controls, work practices, and personal protective equipment;
7. Information on the types, proper use, location, removal, handling, decontamination and disposal of personal protective equipment;
8. An explanation of the basis for selection of personal protective equipment;
9. Information on the hepatitis B vaccine, including information on its effectiveness, safety, method of administration, the benefits of being vaccinated, and that the vaccination will be offered free of charge;
10. Information on the appropriate actions to take and persons to contact in an emergency involving blood or OPIM;
11. An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and medical follow-up that will be made available;
12. Information on the post- exposure evaluation and follow-up that the employer is required to provide for the employee following an exposure incident;
13. An explanation of the signs and labels and /or color-coding required; and
14. An opportunity for interactive questions and answers with the training instructor(s).



## CHAPTER 9: CONFINED SPACE ENTRY PLAN

### A. PURPOSE

The purpose of the Confined Space Entry Program is to provide a written program that establishes requirements and procedures to protect employees from the hazards of entering and working in confined spaces.

### B. APPLICABLE LEGAL STANDARDS

The following standards apply to the Confined Space Entry Plan:

1. Federal OSHA 29 CFR 1910.146
2. Oregon OSHA, OAR 437, Division 2, Subdivision J, § 1910.146, Permit Required Confined Space

### C. DEFINITIONS

The following definitions are key to understanding the legal requirements for this plan.

1. **Acceptable Entry Conditions:** The conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.
2. **Alternate Entry:** An alternative process for entering a permit space under very specific conditions. The space remains a permit-required space even when entered using alternate entry.
3. **Attendant:** An individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.
4. **Atmospheric Testing:** See "Testing."
5. **Authorized:** Approved by the employer or controlling contractor.
6. **Authorized Entrant:** An employee who is authorized by the employer to enter a permit space.
7. **Barrier:** A physical obstruction that blocks or limits access.
8. **Blanking or blinding:** The absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.
9. **Calibration:** The checking of a direct-reading instrument against an accurate standard (such as a calibration gas) to determine any deviation and correct for errors. This process may be referred to as a "bump test" in which an instrument is tested with an accurate standard to ensure it is still reading correctly. For the purposes of this rule, a "bump test" is a calibration.
10. **Confined Space:** A space that:
  - a. Is large enough and so configured that an employee can fully enter and perform assigned work; and
  - b. Has limited or restricted means for entry or exit (for example: tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and
  - c. Is not designed for continuous human occupancy.
11. **Control:** The action taken to reduce the level of any hazard inside a confined space using engineering methods (for example, by isolation or ventilation), and then using these methods to maintain the reduced hazard level. Control also refers to the engineering methods used for this purpose.
12. **Controlling Contractor:** The employer that has overall responsibility for construction at a worksite.

13. **Decontamination:** Effectively removing any hazardous substances from employees and their equipment to the extent necessary to preclude the occurrence of foreseeable adverse health effects.
14. **Double Block and Bleed:** The closure of a line, duct, or pipe by closing and locking or tagging a drain or vent valve in the line between the two closed valves.
15. **Emergency:** Any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.
16. **Entrant:** See “Authorized Entrant.”
17. **Engulfment hazard:** A physical hazard consisting of a liquid or flowable solid substance that can surround and capture an individual. Engulfment hazards may cause death or serious physical harm if: the individual inhales the engulfing substance into the respiratory system; the substance exerts excessive force on the individual’s body resulting in strangulation, constriction, or crushing; or the substance suffocates the individual.
18. **Entry:** The action by which any part of an employee’s body breaks the plane of an opening into a confined space. Entry (or entry operations) also refers to the period during which an employee occupies a confined space.
19. **Entry Permit:** Written authorization from the employer, controlling contractor, or owner of a permit-required confined space to enter a space and perform work.
20. **Entry Supervisor:** The person (such as the employer, foreman, crew chief, or any other designated employee) responsible for:
  - a. Determining if acceptable entry conditions are present at a permit space where entry is planned; and
  - b. Authorizing entry and overseeing entry operations; and
  - c. Terminating entry as required.
21. **Hazard:** A physical hazard or hazardous atmosphere.
22. **Hazardous atmosphere:** An existing or potential atmosphere consisting of at least one of the following:
  - a. A flammable gas, vapor, or mist in excess of 10% of its lower flammable limit (LFL);
  - b. An atmospheric oxygen concentration below 19.5% or above 23.5%;
  - c. An airborne combustible dust environment at a concentration that meets or exceeds its LFL;
  - d. An airborne concentration of a substance that exceeds the dose or exposure limit specified by an Oregon OSHA requirement; or
  - e. Any atmospheric condition recognized as immediately dangerous to life or health (IDLH).
23. **Host Employer:** An employer who owns or manages the property on which construction is taking place.
24. **Hot Work Permit:** The employer’s written authorization to perform operations capable of providing a source of ignition. (For example: riveting, welding, cutting, burning, or heating.)
25. **Immediately dangerous to life or health (IDLH):** Any condition which poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual’s ability to escape unaided from a permit space.
26. **Inerting:** The displacement of the atmosphere in a permit-required space by non-combustible gas (such as nitrogen) to such an extent that the resulting atmosphere is non-combustible. NOTE: This procedure produces an IDLH oxygen-deficient atmosphere.
27. **Isolation:** The process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or removing sections of lines, pipes or ducts; a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

28. **Line Breaking:** The intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure or temperature capable of causing injury.
29. **Mobile Worker:** An employee who performs their work in multiple locations such as customer sites, company offices, private homes, vendor offices, or construction sites.
30. **Monitor or monitoring:** The process used to identify and evaluate the atmosphere in a permit space after an authorized entrant enters the space. This is a process of checking for changes in the atmospheric conditions within a permit space and is performed in a periodic or continuous manner after the completion of the initial testing of that space. It is also referred to as testing.
31. **Non-entry rescue:** Retrieval of entrants from a permit space without entering the permit space.
32. **Non Permit-Required Space (non-permit space):** A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.
33. **Oxygen deficient atmosphere:** An atmosphere containing less than 19.5 percent oxygen by volume.
34. **Oxygen enriched atmosphere:** An atmosphere containing more than 23.5 percent oxygen by volume.
35. **Permissible Exposure Limits (PEL):** An airborne chemical exposure limit established by Oregon OSHA which cannot be exceeded without proper respiratory protection and the implementation of feasible engineering controls.
36. **Permit-Required Space (permit space):** A confined space that has one or more of the following characteristics:
  - a. Contains or has a potential to contain hazardous atmosphere;
  - b. Contains a material that has the potential to engulf an entrant;
  - c. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
  - d. Contains any other recognized serious safety or health hazard that can inhibit an entrant's ability to self-rescue.
37. **Physical hazard:** An existing or potential hazard that can cause death or serious physical harm in or near a confined space, or a hazard that has a reasonable probability of occurring in or near a confined space, and includes, but is not limited to:
  - a. Explosives; mechanical, electrical, hydraulic, and pneumatic energy; radiation; temperature extremes; engulfment; noise; and inwardly converging surfaces; and
  - b. Chemicals that can cause death or serious physical harm through skin or eye contact (rather than through inhalation).
38. **Potential hazards:** All reasonably anticipated conditions within the space and outside the space that can adversely affect conditions within the space.
39. **Prohibited Condition:** Any condition in a permit space that is not allowed by the permit during the period when entry is authorized.
40. **Rescue:** Retrieving employees who are unable to remove themselves from a permit space.
41. **Rescue Service:** The onsite or offsite personnel who the employer designates to engage in non-entry and/or entry rescue of employees from a permit space.
42. **Retrieval System:** The equipment, including mechanical retrieval devices, used for non-entry rescue of persons from permit spaces.
43. **Self-Contained Breathing Apparatus (SCBA):** A full-faced respirator connected via hose to a portable cylinder containing compressed breathing air.

44. **Serious physical harm:** An impairment in which a body part is made functionally useless or is substantially reduced in efficiency.
45. **Testing:** The process of identifying and evaluating the atmospheric hazards that entrants may be exposed to in a permit-required confined space. Testing includes specifying the initial tests that are to be performed in the permit space. Testing enables employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to and during entry.
46. **Ventilate or Ventilation:** Controlling a hazardous atmosphere using continuous forced-air mechanical systems.

## D. GENERAL RESPONSIBILITIES

1. **Employer.** The employer is responsible to:
  - a. Evaluate the workplace to determine if there are any confined spaces, classify the confined spaces, and develop a list of these confined spaces and acceptable entry conditions for each. Note: When there are multiple confined spaces of the same type that have the same hazards, such as sewers, water vaults, or valve pits, you do not need to identify the exact location of each space so long as you provide enough information so that employees can readily identify each type of space and its hazards at each location.
  - b. Post danger signs or use equally effective means to inform employees of the existence and location of and the danger posed by permit-required confined spaces. Signs reading: “DANGER—PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER,” or similar language should be posted where practical;
  - c. Provide proper training and education for all employees who are required to work in confined spaces and maintain copies of training records;
  - d. Ensure the proper personal protective equipment and safety equipment is available and used by employees when entering confined spaces;
  - e. Maintain copies of all permits issued for at least one year;
  - f. Designate an Entry Supervisor for all permit-required confined space entries; and
  - g. Schedule confined space non-entry rescue practice at least once each year.
  - h. Each department will be responsible to review their confined space permits for the previous year by the end of the fiscal year, i.e. June 30. The purpose of the review is to ensure that the proper level of protection is provided to employees entering permit spaces.
  - i. The Safety Committee or a designated committee will be responsible to review the Confined Space Program annually or if any of the following conditions occur:
    - i. There is an unauthorized entry of a permit space;
    - ii. A previously recognized hazard is discovered;
    - iii. An injury or near-miss occurs during entry; or
    - iv. An employee reports concerns about the effectiveness of the program.
2. **All Employees** are responsible to:
  - a. Follow the rules of the Confined Space Entry Program;
  - b. Report any missing signs, defective equipment, or other concerns to their Supervisor; and
  - c. Notify the Supervisor when they feel sufficient training has not been provided or when refresher information is needed.

3. **Entry Supervisor.** A designated employee may be assigned the responsibility of Entry Supervisor. The Entry Supervisor may also serve as an Attendant or as an Authorized Entrant. An Entry Supervisor is responsible to:
- a. Know the hazards that may be faced during confined space entry, including information on the type of hazard, as well as signs, symptoms, and consequences of exposure to those hazards;
  - b. Understand the means and methods to control and/or eliminate the hazards of the permit space;
  - c. Verify, by checking, that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted, and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin;
  - d. Inform entrants and attendants of the hazards and conditions associated with the space and the methods used to eliminate and/or control those hazards;
  - e. Notify Umatilla County Dispatch prior to entry into a permit-required confined space and verify rescue services are available and that the means for summoning them are operable;
  - f. Terminate the entry and cancel the permit as required by the permit entry program;
  - g. Remove unauthorized individuals who enter or who attempt to enter the permit space during entry operations;
  - h. Reevaluate the conditions within the space whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space.
4. **Attendant.** The Attendant is responsible to:
- a. Know the hazards that may be faced during confined space entry, including information on the mode, signs or symptoms, and consequences of the exposure;
  - b. Be aware of possible behavioral effects of hazard exposure in authorized entrants;
  - c. Continuously maintain an accurate count of authorized entrants in the permit space and ensure that the means used to identify authorized entrants accurately identifies who is in the permit space;
  - d. Remain outside the permit space during entry operations unless relieved by another authorized attendant. The new attendant must be briefed and sign in on the applicable entry form.
  - e. Communicate with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space;
  - f. Monitor activities inside and outside the space to determine if it is safe for entrants to remain in the space and order the authorized entrants to evacuate the permit space immediately under any of the following conditions:
    - i. If the attendant detects a dangerous or hazardous condition;
    - ii. If the attendant detects the behavioral effects of hazard exposure in an authorized entrant;
    - iii. If the attendant detects a situation outside the space that could endanger the authorized entrants; or
    - iv. If the attendant cannot effectively and safely perform all the duties required of the attendant.
  - g. Take the following actions when unauthorized persons approach or enter a permit space while entry is underway:
    - i. Warn the unauthorized persons that they must stay away from the permit space;

- ii. Advise the unauthorized persons that they must exit immediately if they have entered the permit space; and
  - iii. Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.
  - h. Perform NON-ENTRY rescues as specified by the rescue procedure;
  - i. Summon rescue and other emergency services (call 911) as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards; and
  - j. Perform no other duties that interfere with the Attendant's duties.
5. **Authorized Entrant.** The Authorized Entrant (Entrant) is responsible to:
- a. Know the hazards that may be faced during confined space entry, including information on the mode, signs or symptoms, and consequences of the exposure;
  - b. Communicate with the attendant as necessary so the attendant can monitor the entrant's status and to enable the attendant to alert entrants of the need to evacuate the space;
  - c. Alert the attendant whenever the entrant detects a dangerous or hazardous condition or warning sign or symptom of exposure to a dangerous situation;
  - d. Exit from the permit space as quickly as possible whenever:
    - i. An order to evacuate is given by the attendant or the entry supervisor; or
    - ii. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation; or
    - iii. The entrant detects a dangerous or hazardous condition; or
    - iv. An evacuation alarm is activated.

## E. EVALUATION & CLASSIFICATION OF CONFINED SPACES

1. Any confined space not yet classified, or with classification in question, will be considered a Permit-Required Confined space until testing and documentation reclassifies the space to a Non-Permit or Alternate Entry Space. Any entry needed to collect this data must be performed while following Permit-Required entry procedures.
2. The employer is responsible to evaluate the workplace to determine if there are any confined spaces and to classify the confined spaces.
3. The classification of each confined space must include the location of each confined space, any known or anticipated hazard that affects the space, and any precautions and procedures that can reasonably be expected to be necessary for entry into the space.
4. Each space that is identified as a confined space will be further classified as either a "Permit-Required Confined Space" (permit space), an Alternate Entry Procedure Confined Space, or a "Non-Permit Confined Space" (non-permit space).
  - a. A **Permit-Required Confined Space** (permit space) is a space that meets the definition of a confined space and has one or more of the following characteristics:
    - i. Contains, or has the potential to contain, a hazardous atmosphere;
    - ii. Contains a material that has the potential for engulfing an entrant;
    - iii. Has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section; or
    - iv. Contains any other recognized serious safety or health hazard.
  - b. A Permit-Required Confined Space requires a written permit ([Appendix 11](#)) that must be completed prior to entry, and all conditions must be met before entry begins.
  - c. An Alternate Entry Procedure Confined Space is a space that meets the definition of a Permit-Required Confined Space except that the only hazard posed by the permit space is an actual or

potential hazardous atmosphere, and continuous forced air ventilation alone is sufficient to maintain the space safe for entry. An Alternate Entry Confined Space requires written documentation of entry ([Appendix 12](#)).

- d. A Non-Permit Confined Space is a space that meets the definition of a confined space, but all hazards can be eliminated without entry into the space, and the space poses no actual or potential atmospheric hazards. A Non-Permit Confined Spaces does not require a written permit. However, if the work to be performed in the space will cause or has the potential to cause a hazardous atmosphere or any other hazard identified in this program exists, then it must be considered a Permit-Required Confined Space.
5. Any welding or hot work being done in a confined space requires both a Permit-Required Confined Space Permit ([Appendix 11](#)) and a Hot Work Permit ([Appendix 13](#)).

## F. ENTRY REQUIREMENTS

All Confined Space entries will be performed following approved procedures. **ENTRY INTO CONFINED SPACES WILL OCCUR ONLY AFTER THESE PROCEDURES ARE MET.**

1. When preparing to enter any confined space, follow these procedures first:
  - a. Consult the City of Pendleton Catalog of Permit Confined Space list ([Appendix 62](#)) to determine how the space to be entered has been classified in the past. Note any special hazards, and review this information with the entry team.
  - b. Inspect all equipment needed for a permit-required confined space entry to make sure it is in good operating condition and transport it to the work site. Be prepared for a permit-required entry at all times.
  - c. Calibrate or bump test the gas monitor and sign it out.
  - d. Sign out the UHF Radio for contact with DISPATCH.
  - e. Ensure you have the proper forms to be completed. This should include: the Permit-Required Confined Space Form ([Appendix 11](#)), the Alternate Entry Confined Space Form ([Appendix 12](#)), and the Confined Space Entry Hot Work Permit ([Appendix 13](#)).
2. Permit-Required Confined Spaces
  - a. All entries into a permit-required space will be under the direction of a Supervisor or Lead worker. If the Supervisor or Lead worker is not available, Supervisor will designate an Entry Supervisor. The Entry Supervisor may also serve as an attendant or an entrant.
  - b. A written permit ([Appendix 11](#)) will be completed and signed before personnel are permitted to enter the Permit-Required Confined Space. The permit includes the following information:
    - i. The location or identity of the permit space (see [Appendix 62](#));
    - ii. The purpose of the entry;
    - iii. The date, start, and stop times of the permit;
    - iv. The hazards of the space, including special instructions and precautions prior or during entry, including appropriate measures used before entry to eliminate and control hazards;
    - v. Acceptable entry conditions;
    - vi. The names of the Entry Supervisor, Entrant(s) and Attendant(s);
    - vii. Results of initial tests and periodic monitoring performed to evaluate and identify the hazards and conditions of the space;
    - viii. Communication procedures and equipment to be used;
    - ix. Personal protective equipment (PPE) to be used;

- x. Rescue equipment to be used;
  - xi. Rescue services to be used and their contact information;
  - xii. SDS sheets of any chemicals that will be used in the space;
  - xiii. Any other information needed for safety in the particular space.
- c. The Entry Supervisor will review the entry permit requirements and emergency rescue procedures with the authorized entrant(s) and attendant(s) before the entry begins. Entrant(s) and attendant(s) will initial the form to indicate they have reviewed it.
  - d. The Attendant will contact DISPATCH using the UHF Radio. If, for any reason, the radio does not work, contact DISPATCH via phone at 541-966-3651. Inform DISPATCH of the impending entry, location of the permit space, potential hazards, and estimated length of entry. Request a call-back from them if they have not heard from you in the specified length of time.
  - e. Initial atmospheric testing will be done before removing the entrance cover. Eliminate any conditions making it unsafe to remove an entrance cover before cover is removed.
  - f. **NEVER TRUST YOUR SENSES TO DETERMINE IF THE AIR IN A CONFINED SPACE IS SAFE!!! YOU CANNOT SEE OR SMELL MANY TOXIC GASES AND VAPORS, NOR CAN YOU DETERMINE THE LEVEL OF OXYGEN PRESENT.**
  - g. After removing the entrance cover, guard the opening with a barrier or shield if it is necessary to protect entrants from external hazards, such as pedestrians and vehicles.
  - h. Before entering the space, the internal atmosphere must be tested with a calibrated gas monitor for potential hazards, including oxygen content, flammable gases and vapors, and potentially toxic contaminants. Entry will only be made after the appropriate tests show that the atmosphere is safe.
  - i. Testing will be done periodically while the entrant(s) is/are in the space. Atmospheric testing will follow the steps in Atmospheric Testing Requirements, Section I.
  - j. No employee will enter or remain within a space when a hazardous atmosphere is detected within the space as indicated by a gas monitor alarm. If a hazardous atmosphere is detected, the entrant(s) will immediately leave the space and the entry permit will be canceled.
  - k. Continuous forced air ventilation is required, and the air must be from a clean source.
  - l. If the space is greater than 5 feet deep, each entrant will be attached to retrieval equipment, which will include safety harness, lifelines, tripods, and mechanical hoists.
  - m. Pre-arranged communication will be used. This could include visual, voice, line tugs, and/or a two-way radio.
  - n. The entry permit will be maintained and available for reference near the entrance to the permit space while the entry is in progress. SDS sheets for all products used in the confined space will also be kept near the entrance while the entry is in progress.
  - o. Permits will be granted for the duration of the project requiring confined space entry. When the work is complete and entrants have left the space, the space will be closed and the Entry Supervisor will cancel the permit.
  - p. Contact DISPATCH again and inform them that the team has safely exited the confined space.
  - q. Copies of the entry permit will be maintained for at least one year.

### 3. Alternate Entry Confined Space

- a. This procedure is to be used when entering spaces where the only hazard posed by the space is an actual or potential hazardous atmosphere. Always re-evaluate the space before proceeding to ensure that it still meets the requirements of an Alternate Entry Confined Space. (NOTE: See [Appendix 62](#) for a listing of all designated alternate entry spaces). Employees may



enter the space provided either of the following has been completed: 1) Eliminate all physical and atmospheric hazards so that conditions that caused the hazards no longer exist; 2) Eliminate all physical hazards in the space and control all hazardous atmospheres with continuous ventilation.

- b. Document each entry into an Alternate Entry Confined Space by completing the Alternate Entry Confined Space form in [Appendix 12](#).
  - c. A two-person entry team will be used. It will include an Attendant and an Entrant, and one of these will act as Entry Supervisor.
  - d. The Entry Supervisor will contact DISPATCH via UHF radio. If, for any reason, the radio does not work, contact DISPATCH via phone at 541-966-3651. Inform them of the impending entry, location of the confined space, potential hazards, and estimated length of entry. Request a call-back from them if they have not heard from you in the specified length of time.
  - e. Initial atmospheric testing will be done before removing the entrance cover. Eliminate any conditions making it unsafe to remove the entrance cover before the cover is removed.
  - f. After removing the entrance cover, guard the entrance with a barrier or shield if it is necessary to protect entrants from external hazards, such as pedestrians and vehicles.
  - g. Before entering the space, the atmosphere must be tested with a calibrated gas monitor for potential hazards, including oxygen content, flammable gases and vapors, and potentially toxic contaminants.
  - h. If a hazardous atmosphere is found, continuous forced air ventilation is required, and the air must be from a clean source.
  - i. No employee will enter or remain within a space when a hazardous atmosphere is detected within the space as indicated by a gas monitor alarm.
  - j. Any changes in use or configuration of the space will trigger re-evaluation of the space.
  - k. When the work is complete and entrants have left the space, the space will be closed and the Entry Supervisor will complete the Alternate Entry Confined Space form. Copies of the form will be maintained for at least one year.
  - l. Contact DISPATCH again and inform them that the team has safely exited the confined space.
4. Non Permit Confined Spaces
- a. Re-evaluate the space before proceeding to ensure that it still meets the requirements of a Non Permit Space.
  - b. As an additional precaution, the internal atmosphere will be tested with a calibrated gas monitor prior to entry unless the space is exceptionally large or has existing ventilation.
  - c. If a hazardous atmosphere is detected, the space will be re-designated a Permit-Required Space until changes in the space can render it fully safe. Measures will be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.
  - d. Continuous forced air ventilation may be used for comfort of entrant(s) but is not required.
  - e. A written permit is not required for a Non-Permit Confined Space.

## G. HOT WORK

1. Hot work involves welding or using some type of an open flame and includes riveting, welding, cutting, burning, heating or using other sources of ignition.
2. When employees are doing hot work in a confined space, a Hot Work Permit ([Appendix 13](#)) is required in addition to a Permit-Required Confined Space Permit ([Appendix 11](#)). The Entry Supervisor is responsible to complete the Hot Work Permit.

3. The Hot Work Permit will include:
  - a. The location or identity of the permit space;
  - b. The purpose of the entry;
  - c. Identification of special fire hazards so that proper precautions can be implemented to control the conditions;
  - d. The measures for isolation of other hazards that may be affected by hot work, including electrical, gas, or other hazardous chemicals;
  - e. Additional personal protective equipment (PPE) that may be required;
  - f. The identity of the Entry Supervisor, Attendant(s), and Entrant(s); and
  - g. The date and authorized duration of entry.
4. Compressed gas cylinders are not allowed in the confined space.

## H. PERSONAL PROTECTIVE EQUIPMENT

The Supervisor will determine personal protective equipment (PPE) needed by all personnel entering the confined space. PPE requirements are listed in the inventory of confined spaces and may include, but should not be limited to, the following:

1. Head Protection—Consideration should be given to the potential for falling objects when determining the need for head protection.
2. Eye and Face Protection—Consideration should be given to irritant dust, vapors, mists, abrasive particles and flying objects when determining the correct eye and face protection.
3. Hand Protection---Consideration should be given to sharp edges, abrasives, acids, solvents, heat and cold when determining the correct hand protection.
4. Foot Protection---Consideration should be given to falling objects, rolling equipment, acids, solvents, and slippery surfaces when determining the correct foot protection.
5. Hearing Protection—Confined spaces often amplify noise, so good hearing protection is essential.
6. Protective Clothing---Consideration should be given to temperature, moisture, chemical resistance, and the likelihood of contamination of clothing with toxic or contaminated materials when choosing protective clothing.
7. Respiratory Protection—Consideration should be given to the potential need for respiratory protection. Procedures in the Respiratory Protection Plan, Safety Manual Chapter 14, shall be followed.
8. Body Harness and Rescue Retrieval Equipment—Consideration should be given as to the type of tripod, body harness and rescue equipment to use. All body harnesses must be examined before use to ensure they are fully operational and have a current inspection tab.

## I. ATMOSPHERIC TESTING REQUIREMENTS

1. Testing of the air within both permit-required and alternate entry spaces will be performed prior to entry to determine oxygen content, toxic gas potential and flammable or explosive atmospheres. Entry into a confined space is prohibited until atmospheric testing shows that the atmosphere is safe. (NOTE: [Appendix 16](#) lists locations at Facilities, Parks & Recreation, Public Works Shops and Resource Recovery Facility of confined space forms, gas monitors, radios, rescue equipment and blowers).
2. Atmosphere Testing Equipment must be calibrated, in good working order, and used correctly. The equipment shall be equipped with audible and visual alarms. **THE CALIBRATION SHALL BE CHECKED BEFORE EACH DAY'S USE**, either using the Calibration function or the Bump Test function. The calibration record will be stapled to the entry permit and become a part of the record

and/or recorded on the Gas Monitor Calibration Log. The Gas Monitor Calibration Log ([Appendix 17](#)) will be posted by each gas monitor. (NOTE: In the Public Works Shops, the calibration record is also maintained on the computer in the crew office and will also be recorded on the calibration log).

3. Calibration bottles must be checked regularly and replaced when out of date. Out of date calibration bottles must be disposed of immediately. Bottles may be returned to the supplier or drained and recycled.
4. **NEVER TRUST YOUR SENSES TO DETERMINE IF THE AIR IN A CONFINED SPACE IS SAFE!!! YOU CANNOT SEE OR SMELL MANY TOXIC GASES AND VAPORS, NOR CAN YOU DETERMINE THE LEVEL OF OXYGEN PRESENT.**
5. Initial testing of the confined space will be done with the ventilation systems shut down and will be conducted using a remote sampling probe to allow the operator to record actual readings while outside the confined space. Document results.
6. Further testing will be conducted with ventilation systems turned on to ensure that the contaminants are removed and that the ventilation system is not itself causing a hazardous condition. Document results.
7. Atmospheric testing will be conducted throughout the entire portion of the space to be occupied (top, middle, bottom). The atmosphere should be tested a distance of approximately four feet in the direction of travel of the entrant(s) and to each side.
8. The atmosphere of the confined space will be considered within the acceptable limits whenever the following conditions are maintained:
  - a. Oxygen level between 19.5% - 23.5%
  - b. Flammable vapors below 10% LFL (Note: many flammable gases are toxic at very low percentages in air thus 10% of the LFL may be a toxic exposure.) The person authorizing entry should carefully judge all readings on the combustible gas sensor.
  - c. Hydrogen sulfide below the PEL of 10 ppm
  - d. Carbon Monoxide below the PEL of 35 ppm
9. If any of the above are not within acceptable limits, ENTRY SHALL BE PROHIBITED until appropriate controls are implemented or appropriate PPE is provided. If testing reveals atmosphere deficiency, the space must be ventilated and re-tested.
10. Continuous atmospheric testing once entry is made is required. Document results at least every 15 minutes. This will give the attendant and entrant early warning of potential problems. If the confined space is vacated for any significant period of time, the atmosphere of the confined space will be re-tested before re-entry is permitted.
11. If unusual odors are encountered, entry shall be terminated immediately and site shall be re-evaluated. The presence of odors is not always related to the degree of hazard just as the lack of odor does not mean that it is safe; however, odors could be the result of an accidental spill which could affect your health and safety. The supervisor will be notified to ensure that the reasons for the unusual conditions aren't due to an accidental chemical spill, release, or process.

## J. VENTILATION REQUIREMENTS

1. Ventilation of confined spaces will be used to provide adequate levels of oxygen, to dilute toxic and flammable gases, and to improve general air quality.
2. There are several methods of ventilating a confined space. The method and equipment used will depend on the size of the confined space and contaminants associated with it.
  - a. Forced air ventilation may be used to push fresh air into the space.

- b. Flushing or purging the confined space may be used to get rid of toxic or flammable gases or vapors, or other airborne impurities.
  - c. Inerting may be used to make the atmosphere in the confined space non-flammable, non-explosive, or otherwise chemically non-reactive by displacing or diluting the original atmosphere with steam or gas that is non-reactive to that space. Note that inerting can produce an IDLH oxygen-deficient atmosphere, so the atmosphere in the space must be re-tested after inerting.
  - d. Ventilation or air conditioning may be necessary for spaces that are too hot and could lead to heat exhaustion or heat stroke.
3. The forced air ventilation will be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.
  4. The air supply for the forced air ventilation will be from a clean source and must not increase the hazards in the space. Blowers need to be located so they will NOT pick up exhaust gases from vehicles. When placing the blower, be careful not to have any unnecessary bends in the blower hoses.

## K. OTHER EQUIPMENT REQUIREMENTS

1. All safety equipment to be used in a confined space must be inspected on a routine basis and before each use to ensure it is in good working condition. Equipment not functioning will be repaired or replaced before it can be used for any confined space entry. The equipment includes, but is not limited to, the following:
  - a. Atmospheric monitoring equipment (see section I)
  - b. Ventilating equipment (see section J)
  - c. Ladders or other equipment to safely enter and exit the space
  - d. Communication equipment (voice, radio, cell phone) for communicating between entrant(s) and attendant and to summon emergency assistance
  - e. Lighting equipment
  - f. Traffic control equipment, such as barricades and signs
  - g. Personal protective equipment (see section H)
  - h. Railing, temporary barriers, or shields
  - i. Rescue and retrieval equipment, including safety harness, life lines, tripods, and mechanical hoists
2. A ladder used for an entry into a confined space must remain at the site throughout the work period.
3. For entry into Permit-Required spaces over 5 feet deep, a retrieval system will be required unless the retrieval system would increase the overall risk of the entry or would not contribute to the rescue of the entrant. For entries using the retrieval system, each entrant shall wear a chest or full body harness with a retrieval line. The other end of the retrieval line shall be attached to a mechanical lifting device or a fixed point outside of the confined space. A mechanical lifting device will be used to retrieve personnel from vertical-type confined spaces.
4. Flashlights, portable lighting and lanterns (preferably battery-powered) can be used to provide adequate lighting so workers can see inside confined spaces. If a potential for explosive vapor exists, use explosion-proof or intrinsically safe lighting.
5. Only double-insulated electrical tools or tools on a ground fault circuit interrupter system should be used in confined spaces. If a potential for explosive vapor exists, use explosion-proof tools.

6. Employees working in roadways or walkways need to ensure their safety and that of their coworkers and the public by proper control of traffic hazards and access to open manholes. All necessary barriers and traffic control devices will be used.
7. Each entry and exit point will be evaluated to determine the most effective methods and equipment to be utilized to enable employees to safely enter and exit the space.

## **L. LOCKOUT/TAGOUT**

1. All energy sources which are potentially hazardous to confined space entrants will be secured, relieved, disconnected and/or restrained before personnel are permitted to enter the confined space. This includes all electrical, mechanical, thermal, pneumatic, and gravity energy sources. Lockout/tagout of equipment systems and processes shall be confirmed prior to permitting entry into the confined space.
2. Lockout/Tagout procedures in Chapter 11 of this Safety Manual shall be followed.
3. Methods of controlling or eliminating hazards from the confined space include, but are not limited to, the following:
  - a. Locking and tagging electrical energy sources
  - b. Blanking or blinding a pipe, line or duct by fastening a solid plate or “cap” over it after depressurizing and disconnecting the contaminant supply lines;
  - c. Double blocking and bleeding a line, duct or pipe by locking and tagging a drain or vent which is open to the atmosphere in the line between two locked-closed valves;
  - d. Removing or misaligning pipe sections or splices;
  - e. Securing mechanical moving parts; and
  - f. Isolating pumps and lines that could cause engulfment

## **M. SAFETY DATA SHEETS (SDS)**

1. SDS sheets for all products and cleaning materials used in the confined space must be reviewed with the confined space team before entry unless the products have already been covered with the employees in the routine hazard communication training.
2. The SDS sheet(s) will be available with the permit at a permit-required confined space entry area.

## **N. ENTRANCE COVERS**

1. Any conditions making it unsafe to remove an entrance cover, such as a manhole lid, will be eliminated before the cover is removed.
2. It is recommended that when entrance covers are removed, the opening will be promptly guarded by a portable railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space and from pedestrians and vehicles.

## **O. RESCUE AND EMERGENCY SERVICES**

Conscientious application of the safety precautions identified in this confined space entry program will greatly reduce the probability that emergency rescue will be required. However, if such an event does arise, an emergency plan is provided to ensure that rescue will be conducted in a manner that prevents additional harm to would-be rescuers or entrants.

1. Two levels of rescue have been identified for removing an entrant from a permit space when the entrant is unable to exit the space under his/her own power:

- a. **Non-Entry Rescue** is performed by the Attendant using the personnel winch in emergency rescue mode, to which the Entrant's full-body harness is attached by means of the winch's self-retracting lanyard. UNDER NO CIRCUMSTANCES IS THE ATTENDANT ALLOWED TO ENTER THE CONFINED SPACE TO ATTEMPT RESCUE.
  - b. **Entry Rescue** can only be performed by a trained Entry Rescue Team. The Entry Rescue Team for the City of Pendleton is the Hermiston Fire Department.
2. Prior to entry into a permit-required confined space or an alternate entry confined space, the Entry Supervisor is to contact DISPATCH via UHF radio. If, for any reason, the radio does not work, contact DISPATCH via phone at 541-966-3651. Inform DISPATCH that a confined space entry is beginning, the location of the confined space, the number of entrants, any special hazards of the space, and the estimated length of entry. Request a call-back from them if they have not heard from you in the specified length of time.
  3. Upon determining that an emergency rescue is needed, the Attendant is to call 911 or contact DISPATCH via UHF radio: "We have a confined space emergency at (give location). I'm starting non-entry rescue. Send an ambulance."
  4. The Attendant then activates the emergency rescue winch and removes the Entrant from the space. (This should take 60 seconds or less.)
  5. The Attendant assesses what kind of medical attention the Entrant needs and then contacts DISPATCH to report that the Non-Entry rescue was successful and to provide an update on the Entrant's condition.
  6. The Attendant then provides first aid and cardiopulmonary resuscitation (CPR), as needed.
  7. If a problem develops with Non-Entry Rescue and Entry Rescue is needed, the Attendant will immediately notify DISPATCH and request a "confined space rescue team."

## P. TRAINING

1. The employer is responsible to provide proper training and education for all employees who are required to work in confined spaces and to maintain copies of training records.
2. Employees will be trained in the safe performance of confined space entry duties at these times:
  - a. Before the employee is first assigned to confined space entry duties;
  - b. Before there is a change in assigned duties;
  - c. Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained;
  - d. Whenever deviations from procedures show inadequacies in employee knowledge or use of procedures; and
  - e. Whenever an employee requests additional training because he/she feels a need for additional or refresher training.
3. Training will include, but is not limited to, the following:
  - a. Awareness of hazards associated with confined space entry;
  - b. How to recognize signs, symptoms and consequences of exposure and be aware of possible behavioral effects of hazard exposure;
  - c. Proper use of atmospheric monitoring equipment;
  - d. Proper use of ventilation equipment;
  - e. Proper use of retrieval equipment, including safety harness, tripod, hoist, and lifeline;
  - f. Proper use of communication equipment;

- g. Personal protective equipment (PPE) requirements and the proper use of PPE;
  - h. Duties and responsibilities associated with their role as a member of the confined space team, either as the Entry Supervisor, Attendant, or Authorized Entrant.
  - i. How to complete an entry permit; and
  - j. How to respond to emergencies.
4. Supervisors will ensure that only authorized employees who have received training in the hazards and proper procedures for confined space entry are permitted to enter confined spaces.

## Q. CONTRACTORS

When an employer employs an outside contractor to conduct confined space work, the employer must notify the contractor of the hazards associated with the confined space(s) involved in the contract. **The Project Manager or Supervisor is responsible for contractor notification.** The employer is responsible to:

1. Inform the contractor that a confined space is involved in the work;
2. Inform the contractor of any special hazards that have been identified in the space, such as chemicals;
3. Inform the contractor of any precautions our employees have taken during entry into the space;
4. Provide the contractor with a copy of the City's Confined Space Entry Program;
5. Obtain a copy of the contractor's Confined Space Entry Program;
6. Coordinate entry operations with the contractor if City employees will also be entering the space; and
7. Debrief the contractor after entry to determine if any problems were encountered by the contractor that would require changes in the City's procedures.

# CHAPTER 10: HAZARD COMMUNICATION PROGRAM

## A. PURPOSE

The purpose of this program is to provide information about chemical hazards and the control of hazards via our comprehensive Hazard Communication Program which includes container labeling, Safety Data Sheets (SDS) and employee training. The program is also designed to meet hazardous material regulations.

## B. POLICY

It is the policy of the City of Pendleton to provide a safe and healthful work environment for all of our employees. The Hazard Communication Program is established for the protection of City employees and to eliminate the possibility of illnesses and injuries caused by exposure to chemicals.

## C. APPLICABLE LEGAL STANDARDS

The following standards apply to the Hazard Communication Program:

Federal OSHA 29 CFR 1910.1200

Oregon OSHA OAR Chapter 437, Division 2, Subdivision Z, Section 1910.1200

Oregon OSHA OAR 437-002-0378, Pipe Labelling (Chapter 437, Division 2, Subdivision Z, Section 0378)

## D. DEFINITIONS

The following definitions are key to understanding the legal requirements for this plan.

**Chemical:** Any element, chemical compound or mixture of elements and/or compounds.

**Chemical Manufacturer:** An employer with a workplace where chemical(s) are produced for use or distribution.

**Chemical name:** The scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation.

**Common name:** Any designation or identification such as code name, code number, trade name, brand name, or generic name used to identify a chemical other than by its chemical name.

**Container:** Any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical.

**Exposure or Exposed:** An employee is subjected in the course of employment to a chemical that is a physical hazard (such as flammability) or a health hazard (such as irritation, lung damage, or cancer), and includes potential (e.g. accidental or possible) exposure.

**Hazardous Chemical:** Any chemical which is a physical hazard or a health hazard or a potential physical or health hazard.

**Hazard warning (label):** Any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning to convey the specific physical and health hazards of the chemical in the container.



**Health Hazard:** A chemical for which there is statistically significant evidence that acute or chronic health effects may occur in exposed employees. Examples include irritation, lung damage or cancer.

**Immediate use:** The hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

**Label:** Any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.

**Mixture:** Any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.

**MSDSOnline:** Internet electronic online safety data sheet management program currently contracted by the City of Pendleton. Program has a large safety data sheet library and allows for customizing city department electronic filing of safety data sheets.

**Physical Hazard:** A chemical for which there is evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, or oxidizer, pyrophoric, unstable (reactive), or water-reactive.

**Piping system:** Includes pipes, single or multiple, of any kind and, in addition, valves and pipe coverings.

**Pipes:** Conduits for the transport of gases, liquids, semi-liquids or fine particulate dusts.

**Safety Data Sheet (SDS):** Written or printed material concerning a hazardous chemical which contains detailed information about health and physical hazards associated with the product. SDSs are prepared in accordance with Oregon OSHA OAR Chapter 437, Division 2, Subdivision Z, Section 1910.1200.

**Workplace:** An establishment, job site, or project, at one geographical location containing one or more work areas.

## E. GENERAL RESPONSIBILITIES

1. **Employer (City).** The employer is responsible to:
  - a. Administer the Hazard Communication Program;
  - b. Train employees to ensure that hazardous materials are handled safely;
  - c. Provide information to employees about the hazardous chemicals to which they are or may be exposed. This may be accomplished by means of training, container labeling and/or safety data sheets (SDS);
  - d. Provide training to employees about the Hazard Communication Program and about physical and health hazards associated with the chemicals to which the employee(s) is/are exposed;
  - e. Maintain the chemical inventory or assign a designee who is responsible for maintaining the chemical inventory;
  - f. Ensure that all containers are properly labeled;
  - g. Provide information to outside contractors about the hazardous chemicals to which they are or may be exposed; and

- h. Make available to employees or their representatives access to any information and training materials related to this Hazard Communication Program.
  - i. Provide an online SDS management system that can be customized by city departments.
2. **Staff who order and/or receive chemical products** are to ensure that original containers have legible labels and that SDS's have been received before releasing the product for use.
  3. **Employees.** The employee is responsible to:
    - a. Follow this Hazard Communication Program;
    - b. Take an active part in Hazard Communication training and request additional information if he/she has questions or does not understand the training;
    - c. Handle products according to labels and SDS, including wearing appropriate personal protective equipment (PPE) as required by labels and SDS;
    - d. Read the labels and SDS for products he/she uses;
    - e. Properly label all secondary containers;
    - f. Report to Supervisor if he/she witnesses the unsafe handling of hazardous chemicals; and
    - g. Notify his/her Supervisor if unlabeled container(s) are discovered.

## F. PROCEDURES

1. **Container Labeling.**
  - a. Oregon and Federal OSHA require that all chemical manufacturers, importers, and distributors properly label all shipments of hazardous chemicals with:
    - the identity of the chemical,
    - hazard warnings and,
    - the name and address of the manufacturer
  - b. When chemical products are received, the person receiving the product will ensure the product has legible labels and SDS before releasing the product.
  - c. The container label must be maintained, legible, in English, and prominently displayed on the container. If a label becomes torn or illegible, it must be relabeled. If an unlabeled container is discovered, the Supervisor must be notified.
  - d. Chemical products may be transferred from the original container to another container, which is called a **secondary container**. The employee in charge of the transfer must ensure that a hazard warning label is placed on the secondary container. Permanent marking pens will be used to label secondary containers. Secondary container labels that are computer-generated can be affixed to the secondary container.
  - e. Chemical products may be transferred to a portable container. Portable containers which only one employee uses and are for immediate use (i.e. the chemical is used completely during his/her shift)

are not required to be labeled. If more than one employee uses the container(s) or if material is stored over to the next shift, the container(s) must be labeled.

## 2. Safety Data Sheet (SDS)

- a. Chemical manufacturers and importers are required by OSHA rules to develop an SDS for each hazardous chemical product. The SDS contains detailed information about the health and physical hazards associated with the product.
  - b. The employer shall have a SDS in the workplace for each hazardous chemical which is used.
  - c. **Staff who order and/or receive new chemical products** are to ensure that original containers have legible labels and that the corresponding SDS has been received with the shipment before releasing the product for use. If a SDS does not accompany the product when it is received, ~~then~~ the receiver will then notify the individual who ordered the chemical. The product will not be released for use until the SDS is available.
  - d. SDS for each new chemical product received will be sent to the Supervisor or designee in charge of maintaining the SDS inventory for that facility. Updated SDS, which are received when the manufacturer or importer changes the SDS, will also be sent to the Supervisor or designee in charge of maintaining the SDS inventory.
  - e. SDS's are readily available to all our employees for review during each work shift. If SDS's are not available or new chemicals in use do not have SDS's, immediately contact your Supervisor.
  - f. Each facility is responsible to prepare and maintain a **Chemical Inventory List**, or inventory of hazardous chemicals for that facility. The list will be kept as the index of the SDS notebook for each facility. The lists (index) will be updated as new chemicals are purchased. The Supervisor or designee is responsible to maintain the current inventory list of chemicals for their facility.
  - g. The city contracts with an online SDS management system. All city departments have access to this program. The program electronically maintains SDS inventory and will automatically update SDS's when changes are published by the chemical manufacturer. The program also allows for custom electronic filing of SDS's by department locations. SDS's can be printed from the online data base.
3. A copy of the Hazardous Communication Program will be kept in the front of each SDS book.

## G. TRAINING

1. Employees will be provided with effective information and training on hazardous chemicals in their work area.
2. Training will be provided at the time of their initial assignment and whenever a new physical or health hazard is introduced into their work area.
3. Initial training may be provided during orientation and/or by the Supervisor.
4. Area-specific and new product training will be provided by the Supervisor and/or at group training sessions.
5. Initial training will consist of:
  - a. An overview of the requirements contained in the Hazard Communication Rules, Oregon OSHA OAR Chapter 437, Division 2, Subdivision Z, Section 1910.1200;
  - b. The location and availability of the City's written Hazard Communication Program;

- c. The location of SDS sheets at their facility;
  - d. Any operations in their work area where hazardous chemicals are present; and
  - e. How to read labels and review an SDS to obtain appropriate hazard information.
6. Area-specific and new product training will consist of:
- a. A review of the chemicals present in their workplace;
  - b. Physical and health effects of the hazardous chemicals;
  - c. Methods and observation techniques used to determine the presence or release of hazardous chemicals in the work area;
  - d. How to lessen or prevent exposure to these hazardous chemicals through usage of control/work practices and personal protective equipment (PPE);
  - e. Steps we have taken to lessen or prevent exposure to these chemicals; and
  - f. Safety emergency procedures to follow if our employees are exposed to these chemicals.
7. It is critically important that all of our employees understand the training. Any additional questions should be directed to the Supervisor.
8. Periodically, employees are required to perform hazardous non-routine tasks. Prior to starting work on such projects, each affected employee will review information about hazards to which they may be exposed during such an activity. The information to review includes, but is not limited to, the following:
- a. The SDS sheet and its location for future reference;
  - b. Specific chemical hazards; and
  - c. Protective/safety measures and personal protective equipment (PPE) which must be utilized.

## H. HAZARDS OF CHEMICALS IN PIPING SYSTEMS

1. All hazardous materials carried in piping systems are required to be labeled under Oregon OSHA OAR 437-002-0378, Pipe Labeling.
2. The pipes must be colored-coded or have lettered labels. The label will give the name of the contents in full or abbreviated form. Label wording shall be brief, informative and simple. A complete hazard label is not required on pipes.
3. The labels may be posted in the area of the pipe/piping systems. The labeling will be applied, at a minimum, at the beginning and end of continuous pipe runs.
4. Pipes or piping systems which use asbestos as a pipe insulation material will be labeled as follows:  
**DANGER**  
**CONTAINS ASBESTOS FIBER**  
**AVOID CREATING DUST**  
**CANCER AND LUNG DISEASE HAZARD**

## I. CHEMICAL HAZARDS REQUIRING ADDITIONAL COMPLIANCE ISSUES

1. There are potential chemical exposures that have additional OSHA requirements that our employees may be exposed to. (Examples: hexavalent chromium, lead, asbestos, silica, vinyl chloride, cadmium, benzene, etc.) If there are job tasks that have potential exposures to these chemicals, the following will be conducted.
  - a. Exposure monitoring that is representative of employee exposures.
  - b. Recordkeeping: Maintain all exposure monitoring records.
2. If exposures exceed the OR-OSHA exposure limits, we will implement all required protective measures in compliance with the applicable OSHA standard. This may include:
  - a. Written Compliance Plan
  - b. Personal Protective Equipment
  - c. Engineering Controls
  - d. Medical Monitoring
  - e. Employee Training

## J. INFORMING CONTRACTORS

City of Pendleton occasionally uses outside contractors for some projects; as a result, staff must inform the contractor of any chemical hazards his/her employees may be exposed to. **The Project Manager or Supervisor is responsible for contractor notification.** The following information will be provided to outside contractors:

1. Hazardous chemicals to which they may be exposed while on the job site;
2. Precautions the employees may take to lessen the possibility of exposure, including personal protective equipment;
3. The location of SDS for chemicals they are potentially exposed to; and
4. Who to contact for additional information.

## K. RECORDKEEPING

Over time, the use of specific products will be discontinued. At the point that a specific product is no longer in use by this agency, the following will occur:

1. The listing for the product will be removed from the Chemical Inventory List.
2. The SDS for the product will be placed into the Archive Section of the Hazard Communication notebook(s) or into a separate notebook.
  - a. The date on which the SDS was placed into the Archive Section will be written on the front sheet of the SDS.
  - b. The SDS must be maintained in the Archive Section for thirty (30) years.
  - c. Each year, the person responsible for maintaining the Hazard Communication notebook(s) will remove SDS's from the Archive Section that are more than thirty (30) years old.

# CHAPTER 11: HAZARDOUS ENERGY CONTROL PROGRAM – LOCKOUT/TAGOUT

## A. PURPOSE

The purpose of the Hazardous Energy Control Program (Lockout/Tagout) is to provide maximum protection for City employees whenever they must isolate machines or equipment from energy sources. It shall be used to ensure that the machine(s) or equipment are de-energized, isolated from all potentially hazardous energy sources, and locked out before employees perform any servicing or maintenance where the unexpected energizing or startup of the machine(s) or equipment or release of stored energy could cause injury. All sources of energy are covered under this program, including electrical, mechanical, hydraulic, pneumatic, chemical, and thermal energy.

## B. POLICY

It is the policy of the City of Pendleton to provide a safe and healthful work environment for all employees. The Hazardous Energy Control Program is established for the protection of City employees and to help eliminate the possibility of injury due to the unexpected energization or startup of equipment or release of hazardous energy.

## C. APPLICABLE LEGAL STANDARD

The following legal standards apply to the Hazardous Energy Control Program:

1. Federal OSHA 29 CFR 1910.147
2. Oregon OSHA OAR Chapter 437 Division 2, Subdivision J, Section 1910.147

## D. DEFINITIONS

1. **Affected employee:** An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed. **The affected employee's safety may be affected by the de-energization of the equipment.**
2. **Authorized Employee:** A person who locks out or tags out machines or equipment in order to perform the servicing or maintenance on that machine or equipment. An Authorized Employee and an affected employee may be the same person when the affected employee's duties also include performing maintenance or service on a machine or equipment which must be locked or tagged out.
3. **Capable of being locked out:** An energy isolating device will be considered to be **capable of being locked out** if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or if it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.
4. **Energized:** Connected to an energy source or containing residual or stored energy.
5. **Energy isolating device:** A mechanical device that physically prevents the transmission or release of energy, including, but not limited to, the following: a manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated independently; a slide gate; a slip blind; a line valve; a block or any similar device used to block or isolate energy. The term does not include a push button, selector switch, and other control circuit type devices.
6. **Energy source:** Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.
7. **Hot tap:** A procedure used in the repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or

appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

8. **Lockout:** The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.
9. **Lockout device:** A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment.
10. **Normal production operations:** The utilization of a machine or equipment to perform its intended production function.
11. **Other employees:** All other employees whose work operations are or may be in an area where energy control procedures may be utilized.
12. **Out-of-service device:** A tag that is placed on equipment controls or at the main disconnect to notify other personnel that the equipment or process is taken out of service because it is not functioning properly, equipment damage may occur, or personnel does not want the equipment on-line for process reasons. **It is never to be used as an energy control tagout.**
13. **Servicing and/or maintenance:** Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning, unjamming, making adjustments, etc.
14. **Setting up:** Any work performed to prepare a machine or equipment to perform its normal production operation.
15. **Tagout:** The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.
16. **Tagout device:** A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

## E. RESPONSIBILITY

1. **Employer.** The employer **is** responsible to:
  - a. Administer a continuing, effective Hazardous Energy Control Program.
  - b. Provide locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware for isolating, securing or blocking of machines or equipment from energy sources.
  - c. Designate which employees are authorized to perform lockout/tagout within each facility, i.e. which are Authorized Employees.
  - d. Conduct a periodic inspection of the hazardous energy control procedure to ensure that the procedure and the requirements of the program are being followed. The inspection will be conducted at least annually and will be documented.
  - e. Identify specific hazards and develop hazard control procedures for each facility.
  - f. Provide training to ensure that the purpose and function of the Hazardous Energy Control Program are understood by all employees. Authorized Employees are required to receive additional specialized training. Training will be documented.
  - g. Ensure that affected employees are notified of the application and removal of lockout and/or tagout devices.

- h. Ensure that contractors are informed of the City's Hazardous Energy Control Program and are notified of the application and removal of lockout and/or tagout devices that might affect them.
2. **Employees.** Employees are responsible to:
- a. Follow this Hazardous Energy Control Program and comply with the restrictions and limitations imposed upon them during the use of lockout/tagout procedures.
  - b. Notify the Supervisor if any locks, tags, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware for isolating, securing or blocking of machines or equipment from energy sources is missing or in need of repair.
  - c. Be an active participant in Lockout/Tagout training and request additional information if he/she has questions or does not understand the training.
  - d. **Authorized Employees** are required to perform the lockout/tagout in accordance with the specific procedures established.
  - e. **Affected employees** are responsible to ensure that they do not attempt to operate any equipment being locked-out/tagged-out and that they follow all safety procedures in shut down and restarting equipment.
  - f. All **Other Employees** who may see lockout or tagout on equipment are to honor the locks and tags and make no attempt to start or remove the devices.

## F. APPLICATION & BASIC PROCEDURES

1. All equipment energy sources capable of being locked out during servicing, repair, or maintenance will be locked-out to prevent accidental or inadvertent operations which could cause injury. All sources of energy are covered under this program, including electrical, mechanical, hydraulic, pneumatic, chemical, and thermal energy.
2. Equipment energy sources not capable of being locked out will be isolated and then tagged-out to inform all others of the safety procedure in use and warning that no operation of the equipment is permitted. The tagout device will be attached at the same location that the lockout device would have been attached.
3. Typical conditions requiring lockout or tagout devices at City facilities include:
  - a. Anytime repairs, servicing and/or changes are being done on machines or equipment and the safeguards are by-passed, or work on electrical circuits in which the employee could come into contact with hazardous energy occurs.
  - b. Whenever moving parts of machinery or equipment are being cleaned or oiled and accidental contact with movable parts is possible.
  - c. When it becomes necessary to remove a plug or to clear blocked mechanisms or pumps which exposes the employee(s) to potential release of hazardous energy.
  - d. When working on lines which contain hazardous substances or are under high-pressure. Such systems should be clearly marked. Valves in the system should be capable of being locked out. In the case of high-pressure lines, there should be means of safely relieving pressure in blocked sections.
  - e. To lockout power to equipment to prevent use by unauthorized persons and/or to prevent use in off hours.
4. Step-by-step energy control procedures for lockout/tagout will not be written for equipment and machines that meet the following criteria:



- a. The machine or equipment has no potential for stored or residual energy or reaccumulation of stored energy after shut down;
  - b. The machine or equipment has a single energy source which can be readily identified and isolated;
  - c. The isolation and locking out of that energy source will completely deenergize and deactivate the machine or equipment;
  - d. The machine or equipment is isolated from that energy source and locked out during servicing or maintenance;
  - e. A single lockout device will achieve a locked out condition;
  - f. The lockout device is under the exclusive control of the Authorized Employee performing the servicing or maintenance;
  - g. The servicing or maintenance does not create hazards for other employees; and
  - h. The employer, in utilizing this exception, has had no accidents involving the unexpected activation or reenergization of the machine or equipment during servicing or maintenance.
5. For specialized machines and equipment that require complex lockout/tagout procedures, the Supervisor at the facility will develop procedures that will include:
- a. A specific statement of the intended use of the procedure;
  - b. Specific procedural steps for shutting down, isolating, blocking and securing the machines or equipment;
  - c. Specific procedural steps for the placement, removal and transfer of lockout/tagout devices; and
  - d. Specific requirements for testing a machine or equipment to determine and verify the effectiveness of the lockout/tagout devices and energy control measures.
6. Repair and service on cord and plug electric equipment requires that the electric cord be pulled from the energy source prior to repair. If the plug remains under the exclusive control of the employee performing the servicing and there are no other sources of energy (mechanical, pneumatic, hydraulic, or stored energy), no additional lockout/tagout procedures are required.
7. Switch levers will be locked out or tagged out to prevent activation of electrical circuits or equipment on which work is being done. Valves with handle and lock attachment hole will be locked out.
8. Other basic controls that may be needed due to the type of energy present include:
- a. **Hydraulic Energy:** Close valve and bleed off line or block the device.
  - b. **Air Pressure:** Close valve and bleed off pressure from line prior to working on the device. Note: some valves lose pressure when they open, which can cause hydraulic or other liquid flows that are potentially hazardous to employees. These valves must be isolated and controlled.
  - c. **Springs:** Attach a hold-down device or leave in open position where no stored energy is present.
  - d. **Fluid Flow - Water Pressure:** Insure proper gate devices are used that hold the back pressure, or drain lines so no fluid pressures are present.
9. Procedures for maintenance of vehicles and heavy equipment include, but are not limited to, the following:
- a. **Heavy Equipment and Vehicles:** During servicing, the mechanic will follow a normal shut down of the equipment. The key will be removed from the ignition, and the equipment will have a tagout placed on the steering wheel which indicates that the mechanic could be injured if the equipment is started.

- b. **Dump Trucks or any type of hopper or hood that could fall:** The dump bed or device will have the safety bars in place prior to any work around or under a lifted bed for support against gravitational pull due to the potential loss of hydraulic pressure.
- c. **Backhoes or other hydraulic operated boom devices:** If the shovel or boom is raised, the safety bar or blocking devices will be in place if an employee is working under the device. If the shovel or boom devices are on the ground in an energy neutral position, additional controls would not be necessary.
- d. **Mowers:** The mower arm which is hydraulically controlled needs to be set on the ground prior to any work. If the head is worked on in an up position, use safety bars or other secure blocking devices.

## G. LOCKOUT/TAGOUT HARDWARE (EQUIPMENT)

1. Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, hasps, and other hardware will be provided by the employer. Lockout devices will be durable to withstand all types of exposure and substantial enough to prevent removal without the use of excessive force.
2. Equipment not capable of being locked-out will have tags placed on them. Tagout devices will be constructed and printed so that exposure to weather conditions, wet and damp locations, or corrosive environments will not cause the tag to deteriorate or the message on the tag to become illegible. Tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal.
3. Tag attachment devices need to be non-reusable, attached by hand, self-locking, and have a minimum unlocking strength of no less than 50 pounds. A slip lock plastic attachment capable of withstanding 50 pounds may be used.
4. Tagout devices will warn against hazardous conditions if the machine or equipment is energized. Examples include: DO NOT START; DO NOT OPEN; DO NOT CLOSE; DO NOT ENERGIZE; or DO NOT OPERATE.
5. If the locks or tags become damaged in any way, immediately notify the Supervisor and replace the lock or tag.
6. Lockout and tagout devices will be singularly identified and standardized within each facility and will be the only devices(s) used for controlling energy. They can be standardized by color, or shape, or size, or format. The devices will not have other purposes.
7. Lockout and tagout devices will indicate the identity of the employee applying the device.
8. Locks will be issued to each Authorized Employee. Each Authorized Employee will have an individual key. Alternately, some facilities may have Lockout Centers where an Authorized Employee can obtain a lock and corresponding key. No other key, with the exception of a Master Key, will be issued for each lock. Master Keys will be kept in a locked location that is accessible only to the Supervisor.
9. Locks, tags, hasps, chains, and other restraining devices will be kept by each Authorized Employee. Authorized Employees are to use their own lock and key and no other person will be allowed access to them. Extra locks and equipment will be kept by the Supervisor or in a Lockout Center. If an Authorized Employee obtains a lock and key from a Lockout Center, they must keep the key in their possession until the lockout procedure is complete.
10. Employees may need to use an Out-of-Service tag when a piece of equipment is not functioning properly and needs to be removed from service. The Out-of-Service tag is not to be used for lockout/tagout of hazardous energy control. Once work begins on the equipment that places the employee in danger of hazardous energy release, the Authorized Employee(s) must follow lockout/tagout procedures and place their personal lock and/or tag on the energy isolating device.

## H. SEQUENCE FOR A LOCKOUT OR TAGOUT PROCEDURE

For most machinery and equipment, the following procedure is adequate for lockout/tagout. Procedures for specialized machinery and equipment will be developed by the Supervisor of each facility. (See Section F 5) **The lockout/tagout procedure must be conducted in the following manner unless special step-by-step lockout/tagout procedures have been written for specific equipment.**

1. Lockout/tagout shall be performed only by the **Authorized Employee(s)** who are performing the servicing or maintenance. The Authorized Employee(s) will identify the type and magnitude of the energy that the machine or equipment utilizes, understand the hazards of each energy source and know the methods to control the energy.
2. The **Authorized Employee(s)** will notify the **affected employee(s)** that the lockout/tagout system is going to be utilized. In many cases no one's safety will be affected by maintenance and repair activities, thus there will not be any affected employees.
3. The machine or equipment will be turned off or shut down using the normal stopping procedures established for the machine or equipment.
4. The energy isolating device(s) will be deactivated so that the machine or equipment is isolated from the energy sources.
5. Stored or residual energy must be dissipated or restrained by methods such as grounding, repositioning, blocking, or bleeding down. Examples of stored residual energy include, but are not limited to, capacitors, springs, hydraulic energy, and air, gas, steam or water pressure.
6. Equipment using hydraulic pressure will be locked out by placing the hydraulic pump motor electrical disconnect switch in the 'OFF' position, applying a lock to the disconnect, and bleeding off residual pressure.
7. The Authorized Employee will lock out and/or tag out the energy isolating device on the equipment or machines with their individually assigned lock or individually keyed locks or tags that identify the employee applying the device.
8. Lockout devices will be affixed in a manner that will hold the energy isolating device in a 'safe' or 'OFF' position.
9. Most of the electrical disconnects operating various pieces of machinery and equipment can be locked out; however, if machinery or equipment cannot be locked out, then a tagout device will be used.
  - a. Tagout devices will be affixed in a manner and location that will clearly indicate that the operation or movement of the energy isolating device is prohibited. The tag must clearly indicate that the operation or start-up of the energy isolating device from the neutral or "OFF" position is prohibited.
  - b. Tagout procedures will be the same as lockout procedures.
  - c. The tagout device must be securely attached on or as close as possible to the energy isolating device.
10. If more than one person is required to lockout or tagout equipment, one Authorized Employee will be designated as the **Lead Authorized Employee** and will be responsible to coordinate the repair and maintenance.
  - a. Each Authorized Employee will place his/her personal lock or tag on the energy isolating device.
  - b. When an energy isolation device cannot accept multiple locks or tags, a multiple lockout or tagout device (hasp) is to be used.
11. After ensuring that no personnel are exposed, the Authorized Employee(s) will verify that the machine or equipment is disconnected from the energy source by operating the normal operating control.
 

**CAUTION: Return the operating control or controls to neutral or 'OFF' position after verifying the isolation of the machine or equipment.**

12. The machinery or equipment is now locked out, and service or repairs can begin.
13. If an Authorized Employee has any doubts about the lockout/tagout procedure, he/she should contact his/her Supervisor before proceeding.

### **I. EQUIPMENT TESTING UNDER LOCKOUT/TAGOUT:**

Periodically, equipment must be tested or positioned during maintenance or repair. The following procedure must be followed under those conditions:

1. Clear the machine or equipment of all tools and materials that are non-essential items;
2. Ensure that all employees are clear of the immediate area and notify them that the machine, equipment or system will be activated;
3. The Authorized Employee(s) will remove the lockout or tagout device(s);
4. Activate the equipment and proceed with the testing or positioning; and
5. De-energize all systems and complete the entire lockout/tagout procedure before continuing any maintenance, service, or repair.

### **J. RESTORING EQUIPMENT TO NORMAL OPERATIONAL STATUS**

After servicing, maintenance and repair of machinery or equipment is complete, the following procedure will be followed to return the equipment to normal operation.

1. The Authorized Employee(s) will inspect the work area to ensure that all repair or maintenance tools have been removed and that the machinery or equipment components are operationally intact and safeguards have been properly re-installed.
2. The Authorized Employee(s) will verify that all other machinery or equipment that may be affected by the start-up of this machinery or equipment are safely controlled.
3. The Authorized Employee(s) will check the work area to ensure that all employees have been safely positioned or removed.
4. The Authorized Employee(s) will notify all of the affected employees that the servicing or maintenance is completed, the machine or equipment is ready for use, and the equipment is to be restarted.
5. The Authorized Employee(s) will remove the Lockout and Tagout device. If more than one person placed a lock or tag on the equipment, each must remove his/her lock or tag. The Authorized Employee is the only person who will remove the lockout or tagout device. The only exception to this is under the conditions outlined below.

### **K. REMOVAL BY SOMEONE OTHER THAN THE PERSON THAT APPLIED THE LOCK:**

The person placing a lock or tag on machinery or equipment is directly responsible for removing the lockout or tagout device. Removal of a safety lockout or tagout device by any person other than the Authorized Employee who applied it may be done only under the direction of the employees' Supervisor, utilizing the following procedure.

1. The Supervisor will verify that the Authorized Employee who applied the device is not at the facility.
2. The Supervisor will make all reasonable efforts to contact the Authorized Employee, including calling the Authorized Employee at home, to inform him/her that his/her lockout and/or tagout device needs to be removed. If all reasonable efforts have been made to contact the Authorized Employee and if the person was not reachable or could not return to remove the lock, then the Supervisor may use a Master Key that is kept in a locked location, accessible only to the Supervisor, and remove the lockout device.
3. The Supervisor must follow all the correct protocols for removal of a lockout or tagout as outlined in Section J, above, including ensuring that there is no danger to employees and notifying affected employees.

4. The Supervisor will ensure that the Authorized Employee is informed that his/her lock has been removed and that routine operation of the equipment is now occurring before he/she resumes work at the facility.

## L. SHIFT OR PERSONNEL CHANGES

During shift or personnel changes the hazardous energy control responsibility will be transferred in a manner that maintains uninterrupted protection for the employees involved.

1. All affected employees will be informed of the transfer of lockout/tagout devices between the off-going and on-coming Authorized Employees.
2. On-coming Authorized Employee(s) must verify the equipment has been de-energized and proper procedures have been followed. After ensuring that no personnel are exposed, the Authorized Employee will ensure that the machine or equipment is disconnected from the energy source by operating the normal operating control. **CAUTION: Return the operating control or controls to neutral or "OFF" position after verifying the isolation of the machine or equipment.**
3. The on-coming Authorized Employee(s) will apply his/her own lockout/tagout device to the energy control source prior to the removal of the lockout/tagout device by the off-going employee(s).

## M. PERIODIC INSPECTION

1. Periodic inspection is intended to assure that the hazardous energy control procedures continue to be implemented properly, and that the employees involved are familiar with their responsibilities. OSHA requires that an inspection of lockout/tagout procedure must be done AT LEAST ANNUALLY.
2. The periodic inspection will be performed by the Supervisor or Authorized Employee. The inspector(s) must consider:
  - a. Whether the steps in the hazardous energy control procedure are being followed;
  - b. Whether the employees involved know their responsibilities under the procedure; and
  - c. Whether the procedure is adequate to provide necessary protection and what changes, if any, are needed.
3. Periodic inspections will be documented using the Lockout/Tagout Periodic Audit Form in [Appendix 21](#). These records will be maintained at each facility.

## N. EMPLOYEE TRAINING

1. Employees will be trained on the Control of Hazardous Energy—Lockout/Tagout as it applies to their work.
2. Initial training may be provided during orientation and/or by the Supervisor.
3. Employees will receive additional training:
  - a. If their duties include performing maintenance or service on a machine or equipment which must be locked or tagged out and they are authorized to perform the maintenance or service;
  - b. Whenever there is a change in their job assignments or a change in the hazardous energy control procedures; and
  - c. Whenever a periodic inspection reveals that there are deviations from or inadequacies in the employee's knowledge or use of the hazardous energy control procedures.
4. Training will include, but not be limited to, the following:
  - a. Instruction in the purpose and use of the hazardous energy control procedure;
  - b. Recognition of applicable hazardous energy sources, type and magnitude of available energy methods and means necessary for isolation and control;

- c. Instruction in the appropriate use of locks and tags and the limitations of tags, including the following:
    - i. Tags are essentially warning devices affixed to energy isolating devices and do not provide the physical restraint on those devices that is provided by a lock.
    - ii. When a tag is attached to an energy isolating device, it is never to be bypassed, ignored or otherwise defeated.
    - iii. Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.
  - d. Instruction on the appropriate method of notifying affected employees of a lockout or tagout; and
  - e. The prohibition of re-energizing equipment which is locked or tagged out.
5. Employee training will be documented.

## O. CONTRACTORS

When the City employs a contractor to work on machines or equipment, the City must notify the contractor of the hazardous energy associated with the machines or equipment. **The Project Manager or Supervisor is responsible for contractor notification.** The City is responsible to:

1. Inform the contractor of the type and magnitude of the hazardous energy associated with the machines or equipment that might affect them and the methods to control the energy;
2. Provide the contractor with a copy of the City's Control of Hazardous Energy Plan;
3. Obtain a copy of the contractor's Control of Hazardous Energy Plan;
4. Establish mutually agreed-upon procedures for lockout/tagout of machinery and equipment;
5. Coordinate operations and ensure that all affected employees, both the contractor's and the City's, are notified of the application and removal of lockout and/or tagout devices; and
6. Debrief the contractor after the work is complete to determine if any problems were encountered by the contractor that would require changes in the City's lockout/tagout procedures.

# CHAPTER 12: HEARING CONSERVATION PROGRAM

## A. PURPOSE

The purpose of this policy is to establish a Hearing Conservation Program that will:

- provide a workplace that is safe for employees' hearing;
- limit employees' exposure to excessive noise where possible;
- reduce worker's compensation claims;
- comply with OR-OSHA requirements; and
- avoid occupational hearing loss when exposure is necessary.

## B. POLICY

It is the policy of the City of Pendleton to provide a safe and healthful work environment for all of its employees. The Hearing Conservation Program is established for the protection of City employees when performing duties that may expose them to excessive noise.

## C. APPLICABLE LEGAL STANDARD

The following standards apply to the Hearing Conservation Program:

1. Federal OSHA 29 CFR 1910.95
2. Oregon OSHA OAR Chapter 437 Division 2, Subdivision G, Section 1910.95

## D. DEFINITIONS

The following definitions are key to understanding the legal requirements for this plan.

1. **Action level:** An 8-hour time-weighted average of 85 decibels measured on the A-scale, slow response, or equivalently, a dose of fifty percent.
2. **Audiogram:** A chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.
3. **Audiologist:** A professional, specializing in the study and rehabilitation of hearing, who is certified by the American Speech-Language-Hearing Association or licensed by a state board of examiners.
4. **Baseline audiogram:** The audiogram against which future audiograms are compared.
5. **Criterion sound level:** A sound level of 90 decibels.
6. **Decibel (dB):** Unit of measurement of sound level.
7. **Dosimeter:** An instrument for measuring noise exposure for one worker. It stores sound-level measurements and combines them over time, providing an average noise-exposure reading for a specific time period, such as an eight-hour workday.
8. **Hertz (Hz):** Unit of measurement of frequency, numerically equal to cycles per second.
9. **Medical pathology:** A disorder or disease. For purposes of this policy, a condition or disease affecting the ear, which should be treated by a physician specialist.
10. **Noise dose:** The ratio, expressed as a percentage, of (1) the time integral, over a stated time or event, of the 0.6 power of the measured SLOW exponential time-averaged, squared A-weighted sound pressure and (2) the product of the criterion duration (8 hours) and the 0.6 power of the squared sound pressure corresponding to the criterion sound level (90 dB).
11. **Noise dosimeter:** An instrument that integrates a function of sound pressure over a period of time in such a manner that it directly indicates a noise dose.

12. **Otolaryngologist:** A physician specializing in diagnosis and treatment of disorders of the ear, nose and throat.
13. **Representative exposure:** Measurements of an employee's noise dose or 8-hour time-weighted average sound level that City deems to be representative of the exposures of other employees in the workplace.
14. **Slow Response:** This is a damper on the sound level meter needle so that readings are averaged out when the sound levels are uneven.
15. **Sound level:** Ten times the common logarithm of the ratio of the square of the measured A-weighted sound pressure to the square of the standard reference pressure of 20 micropascals. Unit: decibels (dB). For use with this policy, SLOW time response, in accordance with ANSI S1.4-1971 (R1976), is required.
16. **Sound level meter:** An instrument for the measurement of sound level.
17. **Standard Threshold Shift:** A change in the hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2000, 3000, and 4000 Hz.
18. **Time-weighted average sound level (TWA):** That sound level, which if constant over an 8-hour exposure, would result in the same noise dose as is measured.

## E. GENERAL RESPONSIBILITIES

1. **Employer (City).** The employer is responsible to:
  - a. Administer a continuing, effective hearing conservation program whenever employee noise exposures equal or exceed the action level.
  - b. Monitor the workplace to identify areas that may put workers' hearing at risk and determine if there is noise exposure equal to or exceeding the action level.
  - c. Establish and maintain an audiometric testing program by making audiometric testing available to all employees whose exposures equal or exceed the action level.
  - d. Make hearing protectors available to all employees at no cost to the employees. The Employer will provide more effective hearing protectors where necessary.
  - e. Ensure that hearing protectors are worn.
  - f. Provide training in the use and care of all hearing protectors provided employees.
  - g. Evaluate hearing protector attenuation for the specific noise environments in which the protector will be used.
  - h. Institute a training program for all employees who are exposed to noise at the action level and ensure employee participation in such program.
  - i. Provide access for employees or their representatives to any information and training materials related to this Hearing Conservation Program.
  - j. Maintain an accurate record of all employee audiometric tests for the duration of each affected employee's employment.
  - k. Maintain noise exposure measurement records for at least two years.
  - l. Discipline employees who do not comply with the terms of the Hearing Conservation Program.
2. **Employees.** The employee is responsible to:
  - a. Wear appropriate hearing protection;
  - b. Take an active part in the annual training;
  - c. Take annual hearing tests, if appropriate;



- d. Maintain his/her hearing protective devices;
  - e. Notify the Supervisor if he/she feels noise levels exceed the action level;
  - f. Request additional information from the Supervisor if he/she has questions or does not understand the training; and
3. Comply with all other aspects of the Hearing Conservation Program, understanding that failure to do so may result in disciplinary action.

## F. EXPOSURE MONITORING

1. Noise levels are monitored to determine workplace exposure to noise.
2. There are two main measuring devices that may be used for noise monitoring:
  - a. A **Sound Level Meter** is used to measure noise levels in the immediate area and identify areas that may put workers' hearing at risk.
  - b. A **Dosimeter** is used to measure the noise exposure of one worker as he/she goes about the day's work.
3. There are three measuring scales that may be used for noise monitoring:
  - a. The **A-scale (dBA)** treats each frequency differently, imposing a very high reference level on some low frequencies and a very low reference level on others. The A-scale most closely mimics the scale of human hearing.
  - b. The **C-scale (dBC)** takes the energy from all frequencies in the sound and treats it all equally.
  - c. The **Octave band scale** reports only the energy from a single frequency.
4. There are three types of sound surveys that the City may use to determine workplace noise exposure:
  - a. **Basic Survey:** the surveyor uses a Sound Level Meter to identify areas in the workplace that may put workers' hearing at risk.
  - b. **Detailed Survey:** the surveyor uses a Sound Level Meter and a Dosimeter to monitor and estimate an individual worker's daily exposure to noise.
  - c. **Engineering Survey:** the surveyor measures noise levels produced by machinery in different operating modes to find ways to eliminate or control excessive noise.
5. For purposes of the Hearing Conservation Program, the City will conduct a Basic Survey, utilizing an A-Scale, Slow Response Sound Level Meter. Results of the Basic Survey are shown in [Appendix 22, Noise Levels](#).
  - a. The sampling strategy will be designed to identify employees for inclusion in the Hearing Conservation Program and to enable the proper selection of hearing protectors.
  - b. All continuous, intermittent and impulsive sound levels from 80 decibels to 130 decibels will be included in the noise measurements.
  - c. Instruments used to measure employee noise exposure will be calibrated to ensure measurement accuracy.
6. Where specific areas or duties are identified in the Basic Survey as putting workers' hearing at risk, a Detailed Survey will be used to better characterize the noise exposure.
7. Monitoring will be repeated whenever a change in production, process, equipment or controls increases or decreases noise exposures or when:
  - a. Additional employees may be exposed at or above the action level; or
  - b. The attenuation, or noise reduction, provided by hearing protectors used by employees may be rendered inadequate to meet the requirements of the hearing protector attenuation part of this program.

8. The employer will provide affected employees or their representatives with an opportunity to observe any noise measurements conducted pursuant to this section.

**G. OCCUPATIONAL NOISE EXPOSURE**

1. Once the Basic Survey has been completed, employee noise exposures will be computed. Noise Dose calculations are detailed in [Appendix 23](#), Noise Exposure Computation. [Appendix 23](#), Table B-1 shows the permissible time (T) an employee can be exposed at a particular sound decibel level (L). The permissible exposure time is without regard to any attenuation (noise reduction) provided by the use of personal protective equipment (PPE), such as ear plugs or ear muffs.
2. When noise levels are determined by octave band analysis, utilize [Appendix 24](#), Equivalent Sound Level Contours, to determine the equivalent A-weighted sound level.
3. For purposes of this program, an 8-hour time-weighted average of 85 decibels or a dose of fifty percent shall be referred to as the Action Level. The employer will notify each employee exposed at or above the Action Level of the results of the monitoring.
4. Protection against the effects of noise exposure is required when the sound levels exceed those shown in Table 1, below, when measured utilizing an A-Scale, Slow Response, Sound Level Meter. More detailed information concerning Permissible Noise Exposures is provided in [Appendix 23](#), Table B-1.

Table 1 – Permissible Noise Exposures

Duration per day/hours	Sound level dBa slow response
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

5. Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.
6. When employees are subjected to sound at or exceeding those listed in Table 1, the employer must reduce their exposure. There are three main strategies for managing noise exposure; the employer may use any or all of these strategies.
  - a. **Engineering Controls** can be used to modify the equipment to control the noise. Examples include building an enclosure around the equipment or utilizing acoustic sound board to minimize the noise.
  - b. **Administrative Controls** manage workers’ activities to reduce exposure. Examples include job rotation, shutting down noisy equipment when it’s not in use, and maintaining the equipment in good running order.
  - c. **Personal Protective Equipment (PPE)** may be used to reduce workers’ noise exposure. The use of Hearing Protection Devices (HPDs) is discussed in Section H, below.

7. The employer is required to establish and maintain an Audiometric Testing Program and make audiometric testing available to all employees who are exposed at the Action Level. Details of the City's program are provided in [Appendix 25](#), Audiometric Testing Program.
8. All employees who are exposed at the Action Level are eligible to obtain an Audiometric Test annually at no cost to the employee and during normal working hours. If the employee waives this right to receive an Audiometric Test, a signed form indicating the employee's choice will be required. ([Appendix 67](#))

## H. HEARING PROTECTION DEVICES (HPDs)

1. The employer will make hearing protection devices (HPDs) available to all employees exposed at or above the Action Level at no cost to the employees. HPDs will be replaced as necessary.
2. The employer will require that HPDs are worn:
  - a. By any employee who is exposed at the Action Level or any employee who has experienced a standard threshold shift (STS);
  - b. By any employee who is exposed to excessive noise levels of City machinery or equipment, as detailed in [Appendix 22](#), Noise Levels.
3. Employees will be given the opportunity to select their hearing protection devices (HPDs) from a variety of suitable hearing protectors provided by the employer.
4. The employer will provide training in the use and care of all HPDs provided.
5. The employer will ensure proper initial fitting and supervise the correct use of all HPDs.

## I. HEARING PROTECTOR ATTENUATION

1. The employer will evaluate hearing protector attenuation (noise reduction) for the specific noise environments in which the protector will be used. The employer shall use one of the evaluation methods described in [Appendix 29](#), Methods for Estimating the Adequacy of Hearing Protection Attenuation.
2. Hearing protection devices (HPDs) must attenuate employee exposure to at least an 8-hour time-weighted average of 90 dB, the Criterion Level.
3. For employees who have experienced a standard threshold shift (STS), HPDs must attenuate employee exposure to an 8-hour time-weighted average of 85 decibels or below.
4. The adequacy of hearing protector attenuation will be reevaluated whenever employee noise exposures increase to the extent that the HPDs provided may no longer provide adequate attenuation. The employer will provide more effective hearing protectors where necessary.
5. It must be remembered that calculated attenuation values reflect realistic values only to the extent that the protectors are properly fitted and worn.

## J. TRAINING

1. The employer will institute a training program for all employees who are exposed to noise at or above the Action Level, and will ensure employee participation in such program.
2. The training program will be repeated annually for each employee included in the Hearing Conservation Program. Information provided in the training program will be updated to be consistent with changes in protective equipment and work processes.
3. The employer will ensure that each employee is informed of the following:
  - a. The effects of noise on hearing;
  - b. The purpose of hearing protectors;

- c. The advantages, disadvantages and attenuation of various types of hearing protectors;
  - d. Selection, fitting, use and care of hearing protectors;
  - e. The purpose of audiometric testing; and
  - f. An explanation of audiometric test procedures.
4. The employer will provide access to information and training materials related to this Hearing Protection Program.
    - a. A copy of this policy is in the Safety Manual, which is located at each major worksite, on the City's website, on the shared drive, and will be on file in the office of the Administrative Services/Human Resources.
    - b. The employer will provide, upon request, to affected employees any informational materials pertaining to the OR-OSHA standard that are supplied to the City by OR-OSHA.
    - c. The employer will provide to OR-OSHA, upon request, all materials related to this training and education program.

## K. RECORDKEEPING

1. The employer will maintain an accurate record of all Exposure Monitoring required by Section F of this program.
2. The employer will retain all employee audiometric test records obtained pursuant to Audiometric Testing Program, [Appendix 25](#) of this program. The test records shall include:
  - a. Name and job classification of the employee;
  - b. Date of the audiogram;
  - c. The examiner's name;
  - d. Date of the last acoustic or exhaustive calibration of the audiometer; and
  - e. Employee's most recent noise exposure assessment.
3. The employer will maintain accurate records of the measurements of the background sound pressure levels in audiometric test rooms.
4. The employer will retain records required in this section for at least the following periods.
  - a. Noise exposure measurement records will be retained for two years.
  - b. Audiometric test records will be retained for the duration of the affected employee's employment.
5. All records required by this section will be provided upon request to employees, former employees, representatives designated by the individual employee, and OR-OSHA representative

# CHAPTER 13: PERSONAL PROTECTIVE EQUIPMENT PROGRAM

## A. PURPOSE

The purpose of this program is to allow City employees to safely perform their duties without injury or harm and to ensure they use appropriate personal protective equipment (PPE). PPE shall not be used as a substitute for engineering controls, work practices and/or administrative controls; instead, PPE shall be used in conjunction with these controls to provide the maximum protection possible.

## B. APPLICABLE LEGAL STANDARDS

1. Federal OSHA 29 CFR 1910.132—1910.138
2. Oregon OSHA OAR Chapter 437, Division 2, Subdivision I
3. Note: Respiratory Protection (OAR 437-002-1910.134) is covered in Chapter 14 of this Safety Manual
4. Traffic Control for State Highways for Short Term Work Zones is prepared by Oregon Department of Transportation

## C. DEFINITIONS

1. **ANSI Standards:** American National Standards Institute (ANSI) is a private, non-profit organization that administers and coordinates the U.S. voluntary standardization and conformity assessment system.
2. **Face Shield:** A device worn in front of the eyes and a portion of, or all of, the face to supplement protection afforded by a primary protective device. Often used when exposed to chemical, heat, or glare hazards.
3. **Goggles:** Impact resistant glasses that provide a secure shield around the entire eye area to protect against hazards coming from many directions. Safety goggles may have regular or indirect ventilation.
4. **Personal Protective Equipment (PPE):** Equipment worn by the employee to prevent injury or occupational illness wherever hazards from processes or equipment cannot be contained or eliminated at their source.
5. **Retroreflective:** Reflects radiation (light) so that the paths of the rays are parallel to those of the incident (incoming) rays; light is reflected directly back to the source.
6. **Safety Glasses (or Plano Safety Glasses):** Glasses designed to protect against flying particles. Safety glasses have lenses that are impact-resistant and frames that are stronger than regular eyeglasses. Safety glasses must meet the ANSI standards.
7. **Side Shield:** A device of metal, plastic or other material hinged or fixed firmly to the spectacle to protect the eye from side exposure.
8. **Welding Helmet:** Protects against intense light from welding, sparks, and splashes of molten metal.

## D. GENERAL RESPONSIBILITIES

1. **Employer (City).** The employer is responsible to:
  - a. Administer a continuing, effective Personal Protection Equipment Program;
  - b. Provide PPE for employees;
  - c. Assess the workplace to determine if hazards are present or likely to be present which necessitate the use of PPE; (Complete [Appendix 30](#), PPE Hazard Assessment and certification, to verify the assessment has been performed.)
  - d. Select the types of PPE that will protect the employees from the identified hazards;

- e. Communicate the selection decisions to the employee and assist the employee in selecting PPE that fits properly;
  - f. Train employees in the following areas:
    - i. When to use PPE;
    - ii. What PPE to use;
    - iii. How to properly don, doff, adjust, and wear the PPE;
    - iv. The limitations of the PPE; and
    - v. The proper care, maintenance, useful life, and disposal of PPE.
  - g. Maintain records of PPE Hazard Assessments and employee training;
  - h. Discipline employees who do not comply with the terms of the Personal Protective Equipment Program.
  - i. Employees will not be required to provide their own PPE. However, if employees utilize their own PPE, it is still the Employer's responsibility to assure its adequacy, including proper maintenance and sanitation of the equipment.
2. **Employees.** The employee is responsible to:
- a. Wear appropriate PPE in such a manner which will make full use of its protective properties;
  - b. Take an active part in PPE training;
  - c. Maintain his/her PPE in sanitary and reliable condition;
  - d. Keep appropriate PPE available at the job site so that it will be readily available when needed;
  - e. Inspect his/her PPE at the beginning of each shift and report damaged or defective PPE immediately to his/her Supervisor for replacement; and
  - f. Inform the Supervisor if additional PPE is needed; and
  - g. Requisition additional information or training if he/she has questions or does not understand the training.

## E. PROCEDURES

- 1. Eye & Face Protection (1910.133)
  - a. Eye and face protection is to be worn where there is a reasonable probability of injury to the eyes and face from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.
  - b. Eye protection needs to meet the following criteria:
    - vi. Complies with ANSI standards;
    - vii. Provides adequate protection against the particular hazards for which it is designed;
    - viii. Is durable;
    - ix. Is capable of being cleaned easily; and
    - x. Is clean and in good repair.
  - c. The specific type of eye and face protection needed depends on the particular hazard(s). Some examples are:
    - i. **Impact and particle hazards:** flying fragments, chips, dirt ,grinding, chipping, machining, masonry work, woodworking, sawing, chiseling, powered fastening, riveting, sanding, etc.

- ii. Type of protection: Safety glasses with side protection, goggles, or face shields. For severe exposure, add a face shield over safety glasses or goggles.
  - iii. **Liquid splash hazards:** chemical handling, acids or caustics, irritating mists
  - iv. **Type of protection:** Follow recommendations in MSDS sheet; chemical splash goggles, safety glasses with side protection, and/or face shields.
  - v. **Dust hazards:** woodworking, buffing, or working in dusty conditions
  - vi. **Type of protection:** Safety glasses with side protection, goggles, or face shields.
  - vii. **Heat hazards:** Hot sparks, splash from molten material, high temperature exposure
  - viii. **Type of protection:** Safety glasses with side protection, goggles, or face shields. For severe exposure, add a face shield over safety glasses or goggles.
  - ix. **Welding hazards:** cutting, torch brazing, torch soldering, electric arc, gas welding or other sources of radiant energy  
**Type of protection:** welding goggles or a welding helmet; filter lenses are required and vary with the type of welding; see Attachment B, Filter Lenses for Protection Against Radiant Energy
  - x. **Glare hazards:** working outdoors in bright light  
**Type of protection:** glasses with shaded or special-purpose lenses
- d. Eye protection is required in the following circumstances:
- i. All designated and posted areas;
  - ii. When working with chemicals or in areas where chemicals are in use, and/or when the Safety Data Sheet (SDS) requires or recommends eye protection;
  - iii. While performing tasks in areas that involve: grinding, sawing, chipping, welding, cutting, brazing, machining, pressure hosing, chemical handling, weed-eating, and/or other tasks where there is probability of risk or injury; and
  - iv. While performing tasks in areas where the Supervisor determines that eye protection is required.

## 2. Respiratory Protection (1910.134)

- 5. Refer to the Safety Manual, Chapter 14, *Respiratory Protection Program*.

## 3. Head Protection. (1910.135)

- a. Hard hats are to be used to protect the head from falling and flying objects, impact, and electrical shock or burn.
- b. Hard hats will meet ANSI standards for the job task.
  - i. Class A Helmets: Impact & penetration resistance; electrical to 2200 volts
  - ii. Class B Helmets: Impact & penetration resistance; electrical to 20,000 volts
  - iii. Class C Helmets: Impact & penetration resistance; no electrical protection
- c. Hard hats are required in the following circumstances:
  - iv. All areas designated as “Hard Hat Areas;”
  - v. Construction areas whenever heavy equipment is operating, which includes backhoes, loaders, excavators, cranes, bucket trucks, hoists and any other overhead lifting device that is in operation;
  - vi. Working inside a confined space below ground level;
  - vii. Working inside an excavation or trench below ground level; and

- viii. Areas where there is a possibility of falling objects or overhead hazards, such as under floor openings or walkways, in areas with low ceilings or protruding objects, or in areas where chain saws are operating.
  - d. Hard hats need not be worn when the hazard created by wearing them offsets the benefits of protection created by their use. Determinations under such circumstances will be made by the Supervisor.
  - e. Hard hats that are damaged during use or sustain a blow should be discarded and a new one obtained.
  - f. The hard hat or the shell suspension shall not be altered or modified.
  - g. Hair should be worn in a manner that ensures that it will not be caught in moving equipment/machinery or exposed to ignition sources.
4. Hearing Protection
- a. Refer to the Safety Manual, Chapter 12, *Noise Exposure and Hearing Conservation*, for additional information about hearing protection.
  - b. Employees will be given the opportunity to select their hearing protection devices (HPDs) from a variety of suitable hearing protectors. Employees that require muffs should request them from their Supervisor.
  - c. HPDs are required in the following circumstances:
    - i. By any employee who is exposed at the Action Level or any employee who has experienced a Standard Threshold Shift (STS); and
    - ii. By any employee who is exposed to excessive noise levels from machinery or equipment
5. Foot Protection (1910.136)
- a. Special foot protection is necessary when there is a potential for foot injury, or slipping, or when the feet may become wet due to the work environment.
  - b. The City will provide rubber boots for employees who require them to perform their duties, such as working under wet conditions in water or wastewater, or in excavations.
  - c. The City will assist employees in purchasing safety steel toe shoes or boots as per their union contract. Safety steel toes should be worn when there is a hazard from dropping heavy objects.
  - d. All employees should wear shoes that are appropriate for their duties. For example, leather work boots should be worn when working on or around heavy equipment.
6. Electrical Protection (1910.137)
- 6. This section refers to special protection for working on or near exposed energized conductors or systems. Only qualified electricians or electrical workers would be affected, and these workers would be hired through contract. The specific criteria and additional information can be found in OAR 437-002-1910.137.
7. Hand Protection (1910.138)
- a. Hand protection is worn when employees' hands are exposed to mechanical, chemical, biological, heat or other hazards.
  - b. The specific type of hand protection needed depends on the particular hazard(s). Some examples are:



- i. **Mechanical hazards:** friction, hot or cold materials, shearing, cutting, sharp metal edges and other hazards that could cause cuts, lacerations, abrasions or punctures  
**Type of protection:** leather gloves or heavy-duty rubber gloves
  - ii. **Chemical hazards:** chemical or thermal burns  
**Type of protection:** chemical protective gloves are selected based on the type of rubber/plastic material which affords proper protection against the specific hazard; refer to the MSDS sheet for the specific chemical
  - iii. **Welding hazards:** cutting, torch brazing, torch soldering, electric arc, gas welding  
**Type of protection:** heavy-duty welding gloves are available for handling hot metals; usage depends upon the type of material and type of welding
  - iv. **Exposure hazards:** exposure to blood or other body fluids or wastewater; the Safety Manual, Chapter 8, *Bloodborne Pathogen Exposure Control Plan*, has additional information about handling blood, body fluids, and wastewater  
**Type of protection:** Latex, plastic and rubber gloves are available for protection depending on the nature of the exposure
- c. Gloves are available from the Supervisor.
- i. Light-weight rubber/vinyl gloves are disposable and will be issued on an as-needed basis.
  - ii. Heavy rubber gloves are issued on an as-needed basis. The employee will write his/her name in the gloves.
  - iii. Leather gloves will be issued by the Supervisor. See the Public Works'
  - iv. Personal Protective Equipment Glove Policy for specific instructions for Public Works employees.
  - v. Gloves are to be used for City work only.
  - vi. Employees shall not share gloves.
- d. Gloves are required under the following circumstances:
- i. When working with chemicals or in areas where chemicals are in use where the Safety Data Sheet (SDS) requires or recommends hand protection;
  - ii. When there is reasonable expectation that the employee may be exposed to blood, body fluids, wastewater, or any material that could pose a health hazard; and
  - iii. Whenever employees' hands are exposed to mechanical, heat or other hazards.
  - iv. Gloves will **NOT** be worn by employees whose hands are exposed to moving parts in which the gloves could be caught.

## 8. Fall Protection (437-002-0125)

- a. All employees will be protected from fall hazards when working on unguarded surfaces more than 10 feet above a lower level or at any height above dangerous equipment.
- b. Lifelines, body belts, harnesses and lanyards will be used for employee safeguarding. Fall protection equipment will be chosen based on the job requirements and the intended use of the equipment.
- c. Fall protection needs to meet the following criteria:
  - i. All components of the fall protection system will meet the strength requirements of ANSI, A10.14-1991.
  - ii. All body belts/harnesses and lanyard hardware, except rivets, will be capable of withstanding a tensile loading of 4,000 pounds without cracking, breaking, or taking a permanent deformation.

- iii. Hardware for body belts/harnesses and lanyards must be drop-forged, corrosion resistant with smooth edges, and have a minimum of 5,000 pound breaking strength without cracks or breaks.
  - iv. Permanent lifelines must be a minimum one-half inch steel cable capable of supporting 5,400 pounds per person at the center of the line.
  - v. If multiple workers are tied off to a single lifeline, the strength requirement must be increased by the number of workers affected (i.e., two workers, one lifeline, minimum breaking strength must be 10,800 pounds at the center of line; three workers, one lifeline, minimum breaking strength must be 16,200 pounds, and so forth).
  - vi. Knots will not be used in components of a fall protection system since a knot will reduce the strength by at least 50%.
  - vii. Lanyards will be kept as short as possible and in no case shall they exceed six feet to minimize the possibility and length of a free fall.
  - viii. Only shock-absorbing lanyards will be used to reduce the fall arresting impact on the wearer.
  - ix. When tied off while working on suspended scaffolding, each worker must use a separate line which is not connected to the scaffold.
  - x. Wire rope or rope-covered wire lanyards will not be used where impact loads are anticipated or where there is an electrical hazard.
  - xi. Rope lanyards will not be stored in work pouches where they may be subject to deterioration.
  - xii. Where there is exposure to abrasion, spun nylon rather than filament nylon will be used.
  - xiii. Only safety belts/harnesses with locking snaps will be used to prevent "rollout" or disengagement. All hardware will be compatible with the locking snap.
  - xiv. Tongue-type buckles will be used in lieu of friction buckles since friction buckles may lose the ability to stop detachment if contaminated with grease or oil.
- d. Inspection of Fall Protection Equipment
- i. The user will inspect the fall protection equipment prior to each use.
  - ii. A trained and competent person will inspect all components of each fall protection device at least once each six months. The dates of this biannual inspection will be recorded on a permanent tag attached to the harness.
  - iii. Every five years, the fall protection system will be returned to the manufacturer for recertification.
  - iv. Any defective body belt, harness or lifeline will be destroyed or returned to the manufacturer for recertification.
  - v. Any unit subjected to impact loading will be immediately removed from service and destroyed or sent to the manufacturer for recertification.

9. **Road Worksite Protection (Traffic Control for State Highways for Short Term Work Zones)**

(The rules from this publication have been adopted for all state, county, and city highways, roads, and streets.)

- a. All workers on or adjacent to streets and roadways will wear bright red, orange, strong yellow-green or fluorescent versions of these colors. If workers do not have shirts that meet this requirement, they shall wear ANSI-approved safety vests with retroreflective stripes.
- b. All workers on or adjacent to streets and roadways working at dusk or at night will wear ANSI-approved safety vests with retroreflective stripes.

- c. All flaggers will wear ANSI-approved safety vests with retroreflective stripes.
- d. While on duty, all flaggers will be fully clothed. No abbreviated clothing such as swimsuits, shorts, tank tops or halter tops shall be worn.
- e. All flaggers working at dusk or at night will wear clothing with retroreflective material. Specific requirements for the retroreflective clothing are:
  - i. Retroreflective material must clearly identify the wearer as a person.
  - ii. Hard hats worn at night while flagging must be a high visibility color with at least 12 square inches of retroreflective material.
  - iii. ANSI-approved safety vest with retroreflective stripes must be worn.
  - iv. Rain gear must be white or yellow with the vest as an outer garment.
  - v. If gloves are worn, they should be high visibility and/or have retroreflective tape applied to them.

#### 10. Additional Work Clothing Rules

- a. Employees using chain saws must wear approved chaps or leg protectors that cover the leg from the upper thigh to the ankle. The protector must be material designed to resist cuts from the chain saw. Chain saw operators must also wear work boots. Operators and employees in the area must wear hearing protection, eye protection and head protection.
- b. If the employee is working around power-driven machinery or electrical circuitry where jewelry might be a safety hazard, the employee will remove the rings, wristwatches, earrings, bracelets, and other jewelry which could be a hazard.
- c. Loose sleeves, ties, lapels, cuffs, or other loose clothing will not be worn near moving machinery.
- d. Clothing saturated or impregnated with flammable liquids, corrosive or toxic substances, irritants, or oxidizing agents will be removed immediately and not worn again until properly cleaned.
- e. Coveralls and rain gear will be provided as necessary and in accordance with union contracts
- f. Employees working with chemicals may be required to wear a chemical apron or lab coat depending on the nature of the chemicals and the SDS recommendations.
- g. Work clothing will be appropriate to the work performed and conditions encountered.

# CHAPTER 14: RESPIRATORY PROTECTION PROGRAM

## A. PURPOSE

It is the policy of the City of Pendleton to provide employees with a safe and healthful working environment. The purpose of the Respiratory Protection Program is to establish policies and procedures for the effective use of respirators and to protect our employees from airborne contaminant exposure. This program is designed to protect the health of employees and control occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors.

## B. APPLICABLE LEGAL STANDARDS

1. Federal OSHA 29 CFR 1910.134
2. Oregon OSHA OAR Chapter 437, Division 2, Subdivision I, §1910.134

## C. DEFINITIONS

1. **Air-purifying Respirator:** a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.
2. **Assigned protection factor (APF):** The workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this section.
3. **Atmosphere-supplying Respirator:** a respirator that supplies the user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.
4. **Canister or Cartridge:** a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.
5. **Demand Respirator:** an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation; leakage into the facepiece may occur if there is a poor seal between the respirator and the user's face.
6. **Emergency Situation:** any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.
7. **Employee Exposure:** exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.
8. **End-of-Service-Life Indicator (ESLI):** a system that warns the respirator user of the approach of the end of adequate respiratory protection.
9. **Escape-only Respirator:** a respirator intended to be used only for emergency exit.
10. **Filtering Facepiece (Dust Mask):** a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.
11. **Fit Test:** the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.
12. **High Efficiency Particulate Air (HEPA) Filter:** a filter that is at least 99.97% efficient in removing particles of 0.3 micrometers in diameter or larger.
13. **Immediately Dangerous to Life or Health (IDLH):** an atmosphere that poses an immediate threat to life, would cause adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere. All oxygen-deficient atmospheres shall be considered IDLH.

14. **Maximum Use Concentration (MUC):** The maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator, and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can be determined mathematically by multiplying the assigned protection factor specified for a respirator by the required OSHA permissible exposure limit, short-term exposure limit, or ceiling limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine an MUC on the basis of relevant available information and informed professional judgment.
15. **Negative Pressure Respirator (tight fitting):** a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.
16. **National Institute of Occupational Safety and Health (NIOSH):** a federal agency who conducts research and tests certain types of safety equipment, including respirators.
17. **Oxygen Deficient Atmosphere:** an atmosphere with an oxygen content below 19.5% by volume.
18. **Physician or other Licensed Health Care Professional (PLHCP):** an individual whose legally permitted scope of practice allows them to independently provide some or all of the health care services required in this program.
19. **Positive Pressure Respirator:** a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.
20. **Powered Air-Purifying Respirator (PAPR):** an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.
21. **Pressure Demand Respirator:** a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the face piece by inhalation.
22. **Qualitative Fit Test (QLFT):** a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.
23. **Quantitative Fit Test (QNFT):** an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.
24. **Respiratory Inlet Covering:** that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both.
25. **Self-Contained Breathing Apparatus (SCBA):** an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.
26. **Supplied-Air Respirator (SAR):** an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.
27. **Tight-fitting Facepiece:** a respiratory inlet covering that forms a complete seal with the face.
28. **User Seal Check:** an action conducted by the user to determine if the respirator is properly seated to the face.

## D. GENERAL RESPONSIBILITIES

1. **Employer (City).** The employer is responsible to:
  - a. Administer a continuing, effective Respiratory Protection Program;
  - b. Select and provide an appropriate respirator based on the respiratory hazard(s) to which the employee is exposed when such equipment is necessary to protect the health of the employee;
  - c. Train employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations;
  - d. Train employees in the proper use and care of respirators;
  - e. Provide medical evaluations for employees who are required to use respirators;

- f. Provide fit tests for employees who are required to use respirators; and
  - g. Maintain records of medical evaluations, fit tests, and employee training.
2. **Employees.** The employee is responsible to:
- a. Follow this Respiratory Protection Program and wear respirators as required by the program;
  - b. Take an active part in respirator training and request additional information if they have questions or do not understand the training;
  - c. Maintain their equipment in sanitary and reliable condition and store the respirator in a clean, sanitary location;
  - d. Inspect their equipment prior to use each day and report damaged or defective equipment immediately to their Supervisor for replacement; and
  - e. Complete medical evaluations and fit tests if required to use a respirator.

## E. SELECTION OF RESPIRATORS.

1. The employer will select and provide an appropriate respirator based on the respiratory hazard(s) to which the employee is exposed when such equipment is necessary to protect the health of the employee.
2. Only National Institute of Occupational Safety and Health (NIOSH) approved respirators will be used. The respirator will be used in compliance with the conditions of its certification.
3. Chemical Canister/Cartridge Respirators
  - a. Air-purifying respirators have a filter, canister or cartridge that removes air contaminants by filtering, absorbing, adsorbing, or chemical reaction with the contaminants as they pass through the respirator canister or cartridge. They may be particle-removing, gas-vapor removing, or a combination particle-gas-vapor-removing.
  - b. Air-purifying respirators are to be used only where adequate oxygen (19.5% to 23.5% by volume) is available.
  - c. Air-purifying respirators are designed for protection against specific gases or vapors. Therefore, the proper filter, canister or cartridge must be selected for each situation. The City of Pendleton will use the assigned protection factors listed in Table 1 of OR-OSHA Respiratory Protection Standard 1910.134 to select a respirator that meets or exceeds the required level of employee protection. When using a combination respirator (e.g., airline respirators with an air-purifying filter), employers must ensure that the assigned protection factor is appropriate to the mode of operation in which the respirator is being used.
  - d. The filter, canister or cartridge should be changed based on the manufacturer's recommendation and the calculation of estimated life. The estimated life specific use time will be provided to each chemical cartridge user based on a concentration mathematical model calculation of estimated use time and chemical concentrations. This information will be specific to a job or operation. Your supervisor will provide specific information but a general policy on use time of respirators is to replace the respirator or cartridge when:
    - i. Concentration mathematical model provides recommended end of service time;
    - ii. An odor or taste is detected by the user;
    - iii. It becomes difficult to breathe through; or
    - iv. The filter, canister, or cartridge is damaged.
  - e. Filters, canisters and cartridges must be stored according to manufacturer's recommendations.
  - f. All filters, canisters, and cartridges must be labeled and color-coded with the NIOSH-approved label. The label must not be removed, and it must be legible.

4. Atmosphere-Supplying Respirators
  - a. Atmosphere-supplying respirators supply the user with breathable air from a source other than the ambient atmosphere. There are two main types:
    - i. Demand Respirators, which admit breathing air to a facepiece only when the wearer inhales; these are also called Negative Pressure Respirators; and
    - ii. Positive Pressure Respirators, which maintain a positive pressure inside the facepiece during inhalation and exhalation.
  - b. Escape-only respirators must be NIOSH-certified for escape from the atmosphere in which they will be used.
  - c. A Self-Contained Breathing Apparatus (SCBA) is an atmosphere-supplying respirator in which the user carries the air supply. SCBAs can be used in IDLH atmospheres.
  - d. A Supplied-Air Respirator (SAR) is an atmosphere-supplying respirator that has an auxiliary air supply from an external source, such as a compressor, that is isolated from the user. SARs can be used in IDLH atmospheres.
5. Filtering facepieces (Dust Masks) may be used for exposure to general dust and wood dust. They are to be used for low level dust exposures only.

## F. MEDICAL EVALUATION

1. Medical evaluations designed to determine the employee's ability to use a respirator are required for all employees who wear a respirator.
2. The use of a Dust Mask does not require medical evaluation but does require basic information to be provided to the employee.
3. The employer will identify a physician or other licensed health care professional (PLHCP) to perform medical evaluations using either the medical questionnaire in [Appendix 32](#), OSHA Respirator Medical Evaluation Questionnaire, or an initial medical examination that obtains the same information as the medical questionnaire.
4. The medical questionnaire ([Appendix 32](#)) will be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee. The medical questionnaire will be administered in a manner that ensures that the employee understands its content.
5. The medical questionnaire will be sent to the PLHCP for evaluation. The PLHCP will also be provided the following information:
  - a. The type and weight of the respirator to be used by the employee;
  - b. The duration and frequency of respirator use, including use for rescue and escape;
  - c. The expected physical work effort;
  - d. Additional protective clothing and equipment to be worn;
  - e. Temperature and humidity extremes that may be encountered; and
  - f. A copy of the written Respiratory Protection Program and a copy of 29 CFR 1910.134.
6. The employer will provide a follow-up medical examination and any medical tests, consultations or diagnostic procedures that the PLHCP deems necessary to make a determination of the employee's ability to use a respirator.
7. Any follow-up medical examinations will be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee.
8. The employee will have the opportunity to discuss the questionnaire and examination results with the PLHCP.

9. The PLHCP will provide the employer with a recommendation regarding the employee's ability to use the respirator. The recommendation shall provide only the following information:
  - a. Any limitations on respirator use related to the medical condition of the employee or relating to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator;
  - b. The need, if any, for follow-up medical evaluations; and
  - c. A statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendation.
10. The employer will provide medical reevaluation(s) if any of the following occurs:
  - a. An employee reports medical signs or symptoms that are related to ability to use a respirator;
  - b. A PLHCP or Supervisor determines that the employee needs to be reevaluated;
  - c. Observations made during fit testing indicate the employee needs to be reevaluated; or
  - d. A change occurs in workplace conditions that may result in a substantial increase in the physiological burden placed on the employee.

## G. FIT TESTING & FIT CHECKING

1. Respirator fit testing is used to test how well the tight-fitting facepiece seals against the face. Prior to fit testing, the employee must pass the medical evaluation.
2. Before an employee uses a tight-fitting facepiece respirator, he/she must be fit tested with the same make, model, style, and size of respirator that will be used.
3. Employees using a tight-fitting facepiece respirator must pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT) prior to initial use of the respirator, whenever a different respirator facepiece is used, and at least annually thereafter.
4. The fit test will be administered using an OSHA-accepted QLFT or QNFT protocol. Acceptable fit test procedures are detailed in [Appendix 33](#), Fit Testing Procedures.
5. If an acceptable fit cannot be achieved, a different size or style facepiece needs to be fitted.
6. Tight-fitting facepieces will not be worn by employees who have:
  - a. Facial hair that comes between the sealing surface of the facepiece and the face or that interferes with valve function; or
  - b. Any condition that interferes with the face-to-facepiece seal or valve function.
7. If an employee wears corrective glasses or goggles or other personal protective equipment, such equipment must be worn in a manner that does not interfere with the seal of the facepiece to the face of the user.
8. For all tight-fitting respirators, the employee must perform a User Seal Check each time they put on the respirator. Follow the User Seal Check Procedures in [Appendix 34](#), User Seal Check Procedures. Alternately, the employee may use the procedures recommended by the respirator manufacturer if they are at least as effective as the procedures in [Appendix 34](#).

## H. PROCEDURES FOR IDLH ATMOSPHERES

1. For IDLH (Immediately Dangerous to Life and Health) atmospheres, at least one employee must be located outside the IDLH atmosphere. If the IDLH atmosphere is in a confined space, entry must follow ALL procedures outlined in this [Safety Manual](#), [Chapter 9](#), Confined Space Entry Plan.
  - a. The employee(s) stationed outside must have visual, voice, or signal line communication with the employee(s) inside the IDLH atmosphere.



- b. The employee(s) stationed outside must be trained and equipped to provide emergency rescue.
  - c. The employee(s) stationed outside must call for assistance before entering the IDLH atmosphere to perform an emergency rescue. **UNDER NO CIRCUMSTANCES SHOULD THE EMPLOYEE STATIONED OUTSIDE ENTER A CONFINED SPACE TO PERFORM A RESCUE UNTIL BACKUP HAS ARRIVED.**
  - d. The employee(s) stationed outside must be equipped with:
    - i. A SCBA or SAR respirator; and
    - ii. Appropriate retrieval equipment or equivalent means for rescue.
2. In addition to the requirements already listed, in interior structural fires, the employer will ensure that:
- a. At least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times;
  - b. At least two employees are located outside the IDLH atmosphere;
    - i. One of the two individuals located outside the IDLH atmosphere may be assigned to an additional role, such as incident commander in charge of the emergency or safety officer, so long as this individual is able to perform assistance or rescue activities without jeopardizing the safety or health of any firefighter working at the incident.
  - c. All employees engaged in interior structural firefighting use SCBAs.
  - d. Nothing in this section is meant to preclude firefighters from performing emergency rescue activities before an entire team has assembled.

## I. MAINTENANCE AND CARE OF RESPIRATORS

1. Initially, the respirator user will be provided a respirator that is clean, sanitary, and in good working order.
2. The respirator user will be responsible for cleaning and disinfecting the respirator, following the procedures in [Appendix 35](#), Respirator Cleaning Procedures. Respirators will be cleaned and disinfected according to the following guidelines:
  - a. Respirators issued for the exclusive use of one employee will be cleaned and disinfected as often as necessary to be maintained in a sanitary condition;
  - b. Respirators issued to more than one employee will be cleaned and disinfected before being worn by different individuals;
  - c. Respirators used for fit-testing, training or maintained for emergency use will be cleaned and disinfected after each use; and
3. Respirators will be inspected for respirator function, tightness of connections, general condition of all parts, and pliability and signs of deterioration of elastomeric parts. Respirators will be inspected as follows:
  - a. Respirators used in routine situations will be inspected before each use and during cleaning;
  - b. Respirators maintained for use in emergency situations will be inspected at least monthly and in accordance with the manufacturer's recommendations; and
  - c. Escape-only respirators will be inspected before being carried into the workplace for use.
4. The employee will notify the Supervisor immediately of any respirator that fails an inspection. A respirator that fails an inspection will be removed from service and either discarded or repaired before it can be used again.
  - a. Repairs or adjustments to respirators are to be made only by persons appropriately trained.
  - b. Only the manufacturer's NIOSH-approved parts designed for the respirator will be used.

- c. Repairs will be made according to manufacturer's recommendations.

## J. BREATHING AIR QUALITY AND AIR CYLINDERS

1. Compressed air, compressed oxygen, liquid air, or liquid oxygen used for SCBAs and SARs must be of high purity and meet the United States Pharmacopoeia requirements for medical or breathing oxygen.
2. Compressed breathing air must meet at least the following requirements:
  - a. Oxygen content of 19.5—23.5%;
  - b. Hydrogen content of 5 milligrams per cubic meter of air or less;
  - c. Carbon monoxide content of 10 ppm or less;
  - d. Carbon dioxide content of 1000 ppm or less; and
  - e. Lack of noticeable odor.
3. Compressors used to supply breathing air to respirators must:
  - a. Prevent entry of contaminated air into the air-supply system;
  - b. Minimize moisture content so that the dew point at 1 atmosphere pressure is 10° F below the ambient temperature;
  - c. Have suitable in-line air-purifying sorbent beds and filters to ensure breathing air quality; and
  - d. Have a tag containing the most recent change date and the signature of the person authorized by the employer to perform the change.
4. Cylinders used to supply breathing air to respirators must meet the following requirements:
  - a. Cylinders are tested and maintained;
  - b. Cylinders of purchased breathing air have a certificate of analysis from the supplier; and
  - c. The moisture content in the cylinder does not exceed a dew point of -50° F atmosphere pressure.

## K. TRAINING

1. Employees who are required to wear respirators will be trained in their use initially and at least annually thereafter.
2. Training will be understandable and will include, but not be limited to, the following:
  - a. A review of the Respiratory Protection Program;
  - b. Respiratory hazards to which they are potentially exposed to and limitations of the respirator;
  - c. Respirator selection, based on the hazard and respirator capabilities and limitations;
  - d. How to properly don, doff, adjust, and wear the respirators;
  - e. User Seal Check Procedures;
  - f. How to clean, disinfect and store the respirator;
  - g. How to inspect the respirator; and
  - h. How to recognize the medical signs and symptoms that may limit or prevent the effective use of the respirator.
3. Employees who wear respirators when such use is not required will be provided the information in [Appendix 36](#), Information for Employees Using Respirators When Not Required under the Standard.

## **L. RECORDKEEPING**

1. The employer will maintain records for the Respiratory Protection Program.
2. Records of medical evaluations required by this program are confidential and will be maintained by the Administrative Services Officer/HR in accordance with OSHA 1910.1020, Access to Employee Exposure and Medical Records. Medical records for each employee shall be preserved and maintained for at least the duration of employment plus thirty (30) years in compliance with Oregon State law.
3. Fit test records will be maintained by the Supervisor. They will be retained until the next fit test is administered.
4. Training records will be maintained by the Supervisor.

## **M. CONTRACTORS**

When the City employs a contractor to work in a hazardous atmosphere, the City must notify the contractor of the hazardous atmosphere or potentially hazardous atmosphere and the need for respiratory protection. The Department Project Manager or Supervisor is responsible for contractor notification. The City is responsible to:

1. Inform the contractor of a hazardous or potentially hazardous atmosphere;
2. Provide the contractor with a copy of the City's Respiratory Protection Program;
3. Obtain a copy of the contractor's Respiratory Protection Program;
4. Establish mutually agreed-upon procedures and coordinate procedures for working in hazardous atmospheres;
5. Debrief the contractor after the work is complete to determine if any problems were encountered by the contractor that would require changes in the City's Respiratory Protection Program.

# CHAPTER 15: LABORATORY SAFETY & CHEMICAL HYGIENE POLICY & PROCEDURES

## A. PURPOSE

The purpose of the Laboratory Safety and Chemical Hygiene Policy and Procedures is to prevent injury to laboratory workers who use chemicals, to protect others who may be exposed to hazards from the laboratory, and to protect the environment.

## B. APPLICABLE LEGAL STANDARDS

1. Federal: 29 CFR 1910.1450
2. Oregon OSHA, OAR 437, Division 2, Subdivision Z, Toxic and Hazardous Substances, § 1910.1450.

## C. DEFINITIONS

1. **Action Level:** a concentration designated for a specific substance, calculated as an eight (8)-hour time-weighted average, which initiates certain required activities such as exposure monitoring and medical surveillance.
2. **Chemical Hygiene Officer (CHO):** an employee who is designated by the employer and who is qualified by training or experience to provide technical guidance in the development and implementation of this chapter, Laboratory Safety and Chemical Hygiene Policy and Procedures.
3. **Chemical Hygiene Plan (CHP):** a written program which sets forth procedures, equipment, personal protective equipment and work practices that are capable of protecting employees from health hazards presented by hazardous chemicals used in the laboratory.
4. **Combustible Liquid:** any liquid having a flashpoint between 100°F (37.8°C) and 200°F (93.3°C).
5. **Compressed Gas:** a gas or gas mixture in a container which has an absolute pressure exceeding 40 psi. Containers of compressed gas shall be labeled.
6. **Explosive:** a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.
7. **Flammable:** a chemical that falls into one of the following categories:
  - a. **Aerosol flammable:** an aerosol that yields a flame protection exceeding 18 inches at full valve opening or a flashback (a flame extending back to the valve) at any degree of valve opening;
  - b. **Gas flammable:** a gas that, at ambient temperature and pressure, can form a flammable mixture or a gas that, at ambient temperature and pressure can form a range of flammable mixtures;
  - c. **Liquid flammable:** any liquid having a flashpoint below 100°F (37.8°C); or
  - d. **Solid flammable:** a solid that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard.
8. **Flashpoint:** the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested.
9. **Hazardous Chemical:** a chemical that may cause acute or chronic health effects in exposed employees.
10. **Laboratory-type hood (fume hood):** a device located in a laboratory constructed and maintained to draw air from the laboratory and to prevent or minimize the escape of air contaminants into the laboratory.

11. **Oxidizer:** a chemical other than a blasting agent or explosive that initiates or promotes combustion in other materials.
12. **Permissible Exposure Limit (PEL):** an airborne chemical exposure limit established by Oregon OSHA which cannot be exceeded without proper respiratory protection and the implementation of feasible engineering controls.
13. **Physical Hazard:** a chemical that is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or water-reactive.
14. **Unstable (reactive):** a chemical which will vigorously polymerize, decompose, condense, or become self-reactive under conditions of shocks, pressure or temperature.
15. **Water-reactive:** a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

#### D. CHO RESPONSIBILITIES

The Laboratory Technician, under the direction of the Wastewater and/or Water Superintendent, has been designated the Chemical Hygiene Officer (CHO). The CHO has overall safety responsibility for maintaining a safe laboratory working environment and ensuring that:

1. Proper safety procedures are in place and are followed to protect his/her laboratory staff;
2. Adequate emergency equipment is available and is in proper working order;
3. Training in use of emergency equipment and safety procedures has been provided;
4. Information on special or unusual hazards in non-routine work has been distributed to the laboratory workers;
5. Routine safety inspections are conducted;
6. An appropriate safety orientation has been given to individuals when they are first assigned to the laboratory;
7. A copy of this plan is available in the Safety Manual, which is located at each major worksite and will be on file in the office of the Administrative Services/ Recorder;
8. Prior approval has been obtained and planning for disposal, spill prevention and control has been done before working with any new chemicals or new procedures.
9. An annual review and update of the Chemical Hygiene Plan is completed.

#### E. GENERAL SAFETY RULES

All personnel who work in the laboratory are responsible to:

1. Know the safety rules and procedures that apply.
2. Determine the hazard potential (i.e., physical, chemical, biological) and appropriate precautions before beginning any new operation. Review the MSDS as necessary, and refer to Safety Manual, Chapter 10, *Hazard Communication Program*, for more information.
3. Be familiar with emergency procedures. Know the location of and how to use the emergency equipment in your area and how to obtain additional help in an emergency.
4. Know the types of protective equipment available and use the proper type for each job.
5. Notify the CHO of unsafe conditions and actions.
6. Avoid consuming food or beverages or smoking in areas where chemicals are being stored or used.
7. Follow accepted waste disposal procedures.
8. Be certain all chemicals are correctly and clearly labeled. Post warning signs when unusual hazards, such as flammable materials or biological hazards, or other special problems exist.

9. Remain out of the area of fire or personal injury unless it is your responsibility to help meet the emergency.
10. Avoid distracting or startling any other worker.
11. Use equipment only for its designated purposes.
12. Position and clamp reaction apparatus in order to permit manipulation without the need to move the apparatus until the entire reaction is completed.
13. Combine reagents in appropriate order, and avoid adding solids to hot liquids. ALWAYS ADD ACID TO WATER.
14. Notify the Supervisor or CHO when he/she feels sufficient training has not been provided or when refresher information is needed.
15. Failure to follow any of the procedures or rules in this policy may result in disciplinary action.

## **F. LABORATORY HEALTH AND HYGIENE**

1. Use protective apparel, including eye and face protection, gloves and other special clothing or footwear as needed. No sandals, perforated shoes or shorts are allowed.
2. Confine long hair and loose clothing when in the laboratory.
3. Do not use mouth suction to pipet chemicals or to start a siphon; a pipet bulb or an aspirator should be used to provide a vacuum.
4. Avoid exposure to gases, vapors, and aerosols by using appropriate safety equipment, such as a fume hood, whenever such exposure is likely.
5. Wash well before leaving laboratory area. Do not wash with solvents.

## **G. LABORATORY HOUSEKEEPING**

1. Lab work areas will be kept clean and free from obstructions. Aisles and exits and access to emergency equipment and controls should never be blocked.
2. Clean-up should follow the completion of any operation or at the end of each day.
3. Wastes should be deposited in appropriate receptacles.
4. Spilled chemicals should be cleaned up immediately and disposed of properly.
5. Unlabeled containers, chemical wastes, and unnecessary chemicals should be disposed of properly and promptly.
6. Equipment and chemicals should be stored properly.

## **H. PROTECTIVE EQUIPMENT**

1. Each laboratory should have, as a minimum, the following equipment:
  - a. An easily accessible, drench-type shower;
  - b. An eye wash fountain;
  - c. A fire extinguisher; and
  - d. Protective apparel and PPE as necessary.
2. A laboratory-type hood (fume hood) or plexiglass shield may be used to shield employees.
  - a. The fume hood should be used for:
    - i. Any operation having the potential for explosion;
    - ii. Whenever a reaction is attempted for the first time;

- iii. Whenever a familiar reaction is carried out on a larger than usual scale; or
  - iv. Whenever operations are carried out under non-ambient conditions.
- b. A plexiglass shield must be placed so that all personnel in the area are protected from the hazard.
3. Whenever feasible, a fume hood should be used when working with hazardous/toxic chemicals. The established permissible exposure limit (PEL) shall not be exceeded. All hazardous/toxic chemicals will be used so that quantities of their vapors or dusts do not produce adverse toxic effects from entering the general laboratory atmosphere.

## **I. PROPER HANDLING OF GLASSWARE**

1. Careful handling and storage procedures should be used to avoid damaging glassware. Damaged items should be discarded or repaired immediately.
2. Where possible, use plastic containers and plastic or metal connectors.
3. Hand protection should be worn when inserting glass tubing into rubber stoppers or corks or when placing rubber tubing on glass hose connections.
4. Vacuum-jacketed glass apparatus should be handled with extreme care to prevent implosions. Dewar flasks should be taped or shielded. Only glassware designed for vacuum work should be used.
5. Hand protection SHALL be worn at all times when picking up broken glass.

## **J. FLAMMABLE AND VOLATILE HAZARDS**

1. Do not use an open flame to heat a flammable liquid or to carry out a distillation under reduced pressure.
2. Use an open flame only when necessary and extinguish it when it is no longer needed.
3. Before lighting a flame, remove all flammable substances from the immediate area. Check all containers of flammable materials in the area to ensure that they are tightly closed.
4. Notify other occupants of the laboratory in advance of lighting a flame.
5. Store flammable materials in a "flammable" cabinet.
6. When volatile or flammable materials may be present, use only non-sparking electrical equipment.

## **K. WORKING WITH COLD TRAPS AND CRYOGENIC HAZARDS**

1. Always use gloves and a face shield when preparing or using cold baths. Severe burns can result if allowed to contact the skin.
2. Never use liquid nitrogen or liquid air to cool flammable mixtures in the presence of air because oxygen can condense from the air, causing an explosion.
3. Always wear dry gloves when handling dry ice. Never lower head into dry ice chest; carbon dioxide is heavier than air, and suffocation can result.

## **L. WORKING ALONE AND UNATTENDED OPERATIONS**

1. Generally avoid working in laboratories alone unless arrangements have been made with co-workers to cross-check periodically.
2. Never perform experiments or procedures with unknown hazardous materials.

## M. CHEMICAL PROCUREMENT

1. Before any new chemical/substance is ordered, staff who order the substance will review the MSDS and any other manufacturer's information available to determine the following:
  - a. Potential hazards;
  - b. Safe handling procedures and methods;
  - c. Waste disposal procedures; and
  - d. Proper personal protective equipment.
2. Staff who order and/or receive chemical products are to ensure that original containers have legible labels and that SDS have been received before releasing the product for use. Products should be labeled with SDS identification number if appropriate.
3. MSDS on all chemical products will be readily available to all affected employees.

## N. CHEMICAL STORAGE

1. Annual audits of chemicals in storage will be conducted for the purpose of inspecting:
  - a. If chemicals have been stored beyond their appropriate shelf life or have deteriorated;
  - b. If containers have defaced or questionable labels;
  - c. If the containers are leaking or have corroded caps; or
  - d. If the containers have developed any other problems and should be disposed of.
2. Every chemical in the laboratory should have a definite storage place and should be returned to that location after each use.
3. Laboratory refrigerators will be properly labeled as to their appropriate use such as for the storage of chemicals only; food must not be placed in them. All containers placed in the refrigerator should include identification of contents and owner, date of acquisition or preparation, and nature of any potential hazard and/or MSDS identification number.
4. Flammable Liquids
  - a. Quantities of flammable liquids greater than one liter should be stored in approved, labeled containers.
  - b. Flammable liquids received in large containers should be repackaged into safety cans and labeled for distribution.
  - c. Avoid accidental contact with strong oxidizing agents such as chromic acid, permanganates, chlorates, perchlorates, and peroxides, and avoid accidental contact with sources of ignition.
  - d. Flammable liquids should not be stored in a laboratory refrigerator unless the unit is an approved, explosion-proof, or laboratory-safe type.
5. Toxic Substances:
  - a. Chemicals known to be highly toxic, including those classified as carcinogens, should be stored in ventilated storage areas in unbreakable chemically resistant secondary containers. These areas should exhibit a sign warning of the hazard and have limited access.
  - b. Only minimum working quantities of toxic materials should be present in the work area. Storage vessels containing such substances should carry a label such as the following:  
**CAUTION: HIGH CHRONIC TOXICITY or CAUTION: CANCER SUSPECT AGENT**
  - c. An inventory of toxic materials and the names of workers who have been in contact with the materials should be maintained.



- d. Adequate ventilation must be maintained for hazardous materials that have a high vapor pressure (mercury and mercaptans).
6. Compressed Gases:
    - a. Cylinders of compressed gases should be securely strapped or chained to a wall or bench top to prevent their being knocked over accidentally.
    - b. When they are not in use, keep gas cylinders capped.
    - c. Keep gas cylinders away from sources of heat or ignition.

## O. INSPECTION & MAINTENANCE

1. Inspections will be conducted quarterly beginning each calendar year and documented. Deficiencies will be corrected immediately.
2. Maintenance:
  - a. All eye washes and safety showers will be checked weekly for adequate water flow and to insure cleanliness of the water.
  - b. Fire extinguishers will be inspected annually by a fire extinguisher contractor and checked visually each month by staff to ensure they are full and operating properly.
  - c. Fume hoods and other equipment should be inspected at least monthly to assure proper operation.
  - d. Records of maintenance activities will be kept.

## P. FIRST AID AND EMERGENCIES

1. **IN CASE OF EMERGENCY—DIAL 9-1-1.** (For some locations, you will need to dial 9 before dialing 9-1-1. Dial 9-9-1-1 at the following locations: Airport, both Fire stations, Parks, Pendleton Convention Center, Public Works Shops, the Vert, Water Treatment Plant, and Wastewater Treatment Plant.) Provide the dispatcher with the following information:
  - a. What is the location of the emergency?
  - b. What is the nature of the emergency? (fire, chemical spill or release, medical emergency, bomb threat, violence, environmental, excavation, confined space, entrapment, etc.)
  - c. How many people are involved?
  - d. Are there other special hazards to be considered? (electrical hazard, hazardous atmosphere, potential engulfment, etc.)

## Q. MEDICAL CONSULTATION AND MEDICAL EXAMINATIONS

1. All employees who work with hazardous chemicals will be given an opportunity to receive medical attention, including any follow-up examinations required, under the following conditions:
  - a. Development of signs or symptoms associated with a hazardous chemical to which they may have been exposed.
  - b. When exposure monitoring reveals an exposure to an OR-OSHA regulated substance routinely above the action level or permissible exposure limit (PEL).
  - c. Whenever an event takes place such as a spill, leak, explosion, or other occurrence resulting in the likelihood of a hazardous exposure.
2. All medical examinations or consultations will be by, or under the supervision of, a licensed physician, and will be provided without cost or loss of pay, and at a reasonable time and place.
3. The **employer** will provide to the physician:

- a. The identity of the hazardous substance to which the employee may have been exposed; and
  - b. A description of the conditions causing the exposure, including quantitative exposure data if available.
4. The **employee** will provide to the physician:
    - a. Information about any medical condition which might place the employee at increased risk as a result of exposure to a hazardous substance in the workplace.
  5. The **physician** will provide:
    - a. A statement to the employee informing him/her of the results of the medical examination or consultation and any medical condition that may require further examination or treatment.
    - b. A written statement to the employer which will reveal the physician's medical diagnosis as it relates **ONLY** to the occupational exposure. Any unrelated medical findings will be confidential between the patient and the physician.

## R. RECORDS & REPORTING

1. Accidents will be reported according to the procedures in the Safety Manual, Chapter 5, *Accident Investigation Procedures*.
2. Accident Investigations will occur according to the procedures in the Safety Manual, Chapter 5, *Accident Investigation Procedures*. Recommendations from the Accident Investigation for the prevention of similar occurrences will be distributed to the CHO and all laboratory personnel.
3. The CHO will document all training.
4. Medical records, accident records, and accident investigation records will be maintained by the Administrative Services Officer.
5. Spills of reportable quantities of hazardous chemicals will be reported to OERS at 1-800-452-0311.

## S. SIGNS AND LABELS

1. Waste containers will be labeled for the type of waste that can be safely deposited.
2. Signs will be posted to show the locations of safety showers, eyewash stations, exits, fire extinguishers, and emergency phone numbers.
3. Laboratory areas that have special or unusual hazards will be posted with warning signs. Standard signs and symbols will be used for a number of special situations such as radioactivity hazards, biological hazards, fire hazards, and laser operations.

## T. SPILLS AND ACCIDENTS

1. In case of spills or fires, follow the procedures in the Safety Manual, Chapter 7, *Emergency Action, Fire Prevention Plan, and First Aid*.
2. Each laboratory facility will have a plan for evacuations, shutdown, return, and start-up.
3. Each laboratory facility will have a plan for containment and cleanup of hazardous chemical spills and the disposal of broken containers.

## U. INFORMATION AND TRAINING PROGRAM

1. The CHO will provide employees with information and training to ensure that they are apprised of all the hazards of chemicals present in their work area.
2. Training will be provided at the time of an employee's initial assignment to the laboratory area and prior to assignments involving new exposure situations. Frequency of refresher training will be determined by the CHO.

3. Training will include, but not be limited to, the following:
  - a. All elements of this chapter, Laboratory Safety and Chemical Hygiene Policy and Procedures.
  - b. The proper use and maintenance of personal protective equipment (PPE) that may be necessary. See also Safety Manual, Chapter 13, *Personal Protective Equipment Program*.
  - c. The hazards associated with flammable liquids, explosives compressed gases, and toxic gases and vapors to which employees may be exposed.
  - d. Substances that are water-reactive, giving rise to hazardous conditions.
  - e. Signs and symptoms associated with exposures to hazardous chemicals to which they may be exposed.
  - f. Where applicable, the federal and state regulations governing controlled substances such as radioactive materials, drugs, ethyl alcohol, explosives, needles and syringes.
4. Staff who receive chemicals will be trained in the handling of hazardous substances. Such training will include, but not be limited to, the following:
  - a. Physical handling of containers of chemicals so that they are not dropped, bumped, or subject to crushing by being piled one upon another.
  - b. Information about potential environmental and chemical exposures.
  - c. Proper methods of material handling and storage, including the incompatibility of some common substances; the dangers associated with alphabetical storage; and the sensitivity of some substances to heat, moisture and other storage hazards.
  - d. The special requirements of heat-sensitive materials, including those shipped refrigerated or packed in dry ice.
  - e. Proper handling of packages that exhibit evidence that the inside container has broken and leaked its contents.
5. Literature on laboratory safety and on the physical and biological hazards of chemicals in the laboratory, including SDS, will be readily available to all affected employees.

## V. WASTE DISPOSAL PROGRAM

1. Chemicals will be disposed of using accepted disposal methods.
  - a. Indiscriminate disposal by pouring waste chemicals down the drain or adding them to mixed refuse for landfill burial is unacceptable.
  - b. Hoods will not be used as a means of disposal for volatile chemicals.
  - c. Disposal by recycling or chemical decontamination will be used when possible.
  - d. All bacterial plates and trays will be autoclaved according to accepted procedures, placed in plastic bags, and disposed of in the dumpster.
  - e. All discarded glass or sharps will be segregated in a special garbage container.

## CHAPTER 16: ASBESTOS MAINTENANCE PROGRAM

### A. PURPOSE

The purpose of the Asbestos Maintenance Program is to provide a safe and healthful work place for all employees and to protect our employees from occupational exposure to asbestos.

NOTE: Emergency fire-fighting is not subject to this program.

### B. APPLICABLE LEGAL STANDARDS

Federal OSHA 29 CFR 1926.1101

Oregon OSHA OAR 437, Division 2, Subdivision Z, Toxic & Hazardous Substances

Oregon DEQ , OAR 340, Division 248 Asbestos Requirements

### C. DEFINITIONS

**Asbestos**—a generic term applied to naturally occurring fibrous hydrated mineral silicates. These minerals are regarded as hydrated because they are formed by their affinity for water. The term asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and /or altered.

**Asbestos-containing material (ACM)**—any material containing more than one percent asbestos.

**Class I asbestos work**—activities involving the removal of TSI and surfacing of ACM and PACM.

**Class II asbestos work**—activities involving the removal of ACM and PACM in roofing, siding, flooring, transite panels, and ceiling tiles.

**Class III asbestos work**—activities involving maintenance and repair of ACM and PACM which may be disturbed. Typically, public works employees fall into this category.

**Class IV asbestos work**—Maintenance and custodial work activities after Class I, II, III work has been done. Typically, school custodians fall into this category.

**Friable Asbestos-containing material**—any ACM that hand pressure can crumble or pulverize and easily releases fibers when crushed.

**Non-friable Asbestos-containing material**—any ACM that cannot be crumbled, pulverized or reduced to powder by hand pressure. Examples of non-friable ACM include asbestos/concrete (transite) pipe and asbestos cement products.

**Presumed asbestos containing material (PACM)**—thermal system insulation and surfacing material found in buildings constructed no later than 1980.

**Thermal System Insulation (TSI)**—ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain.

## **D. GENERAL RESPONSIBILITIES**

1. **Employer (City).** The employer is responsible to:

- a. Administer the Asbestos Maintenance Program.
- b. Conduct an asbestos building inventory;
- c. Ensure that existing asbestos is inspected periodically;
- d. Ensure that all ACM is properly handled and disposed of;
- e. Provide training to employees who may come in contact with asbestos; and
- g. Maintain records in conjunction with this program.

2. **Employees.** The employee is responsible to:

- a. Follow this Asbestos Maintenance Program;
- b. Take an active part in training and request additional information if he/she has questions or does not understand the training;
- c. Report to the Supervisor if he/she suspects asbestos, ACM or PACM may be present; and
- d. Wear appropriate PPE.

## **E. ASBESTOS BUILDING INVENTORY**

1. A material inventory will be conducted for each facility. The material inventory results will be maintained by the City and available to all occupants.

2. Exposed building materials that are likely to contain asbestos will be tested. Test results will be retained by the City for 30 years. The following materials will be tested:

- a. Pipe Insulation Materials;
- b. Floor Tiles and Mastic (mastic for molding, tiles or carpeting);
- c. Sprayed on Asbestos-containing ceiling materials;
- d. Asbestos Containing Pipe; and
- e. Exterior siding and shingles.

3. Additional sampling will be done prior to removal, demolition, or renovation on all potential asbestos-containing materials (PACM).
4. All asbestos insulation will be labeled.
5. The Supervisor or Project Manager is responsible to notify contractors who perform work on City facilities of the presence or possible presence of any asbestos-containing material (ACM).
6. Occupants in City buildings with sprayed-on asbestos-containing ceiling material will be notified of its presence.

**F. INSPECTION/ABATEMENT GENERAL PROCEDURES FOR ACM/PACM:**

1. All City maintenance staff are expected to note the condition of asbestos insulation and ceiling materials as part of their routine building maintenance. If upon visual inspection, material is cracking, fraying, broken, or damaged, it must be reported to the Supervisor immediately.
2. Maintenance staff will immediately report to their Supervisor broken insulated pipes and any broken or friable materials labeled as asbestos.
3. Damaged pipe insulation or other building surfaces and materials will be reported to the Supervisor for review in relationship to potential asbestos content.
4. Maintenance staff will **not** use the following procedures when working with or around ACM or PACM:
  - a. Drill holes in asbestos material;
  - b. Sand asbestos-containing floor tiles;
  - c. Use dry brushes or brooms to dust surfaces that may contain asbestos;
  - d. Use regular vacuum cleaners to collect asbestos dust or debris;
  - e. Damage ACM or PACM when moving or conducting general maintenance;
  - f. Install curtains, drapes, or other dividers into ACM or PACM.
5. When working with ACM pipe, follow American Water Works Association's (AWWA) guidelines, "*Recommended Work Practices for Asbestos-Cement Pipe.*"

**G. INSPECTION/ABATEMENT PROCEDURES FOR FRIABLE ACM:**

1. If ACM is determined to be damaged and becomes friable, City policy outlines that that only a licensed asbestos abatement contractor can mitigate the cleanup and disposal of friable asbestos. The following precautions will be taken:
  - a. Seal off the area to contain the problem;
  - b. Post proper danger/warning signs, such as:

## DANGER

## ASBESTOS

## CANCER &amp; LUNG DISEASE HAZARD

## AUTHORIZED PERSONNEL ONLY

- c. Friable ACM improperly handled can cause employee exposures to asbestos fibers and also lead to building and surface contamination. **Therefore, it is the City's policy that materials containing friable asbestos will only be handled or removed by licensed asbestos contractors with proper equipment and controls who follow Oregon OSHA and Department of Environmental Quality Standards.**
- d. The supervisor, through City contracting protocols, will then contact a licensed asbestos abatement contractor to clean up, repair, remove and properly dispose of the friable ACM material.
- e. The licensed asbestos abatement/inspection contractor will determine the scale of the work.
- f. After abatement work, the licensed asbestos contractor will re-inspect the area for asbestos hazards.

**H. INSPECTION/ABATEMENT PROCEDURES FOR NON-FRIABLE ACM:**

1. The City of Pendleton has entered into a Letter of Agreement with Oregon OSHA, effective November 17, 2015, (See Appendix 62) regarding the repair of non-friable asbestos-containing water-pipe under the requirements of OAR 437-003-1926.1101, "Asbestos." This document clearly outlines that initial air-monitoring is not required when ACM pipe is encountered because past air monitoring in a variety of situations has shown that airborne levels of asbestos do not approach nor exceed the airborne permissible levels when appropriate work practices are followed and therefore, respiratory protection is not needed but should be readily available. An employee always has the option of wearing respiratory protection if they desire to.
2. According to the Letter of Agreement, the on-scene designated Competent Person is responsible for handling of ACM pipe safely and will ensure that all components of the program are followed. The Competent Person has the training and experience to identify asbestos hazards, select the appropriate control strategy for potential asbestos exposure and has authority to take prompt corrective safety measures to eliminate any hazard. The Competent Person must ensure the following:
  - a. Personnel must be current in their asbestos training under Class III protocols;
  - b. Work procedures under this agreement must be followed;
  - c. Proper safety equipment must be used;
  - d. Respiratory protection must be used when an employee requests it;

- e. Proper PPE must be worn;
  - f. Procedures for establishing a regulated area or controlled zone when ACM pipe is removed are briefed and followed;
  - g. Procedures for disposal and decontamination are briefed and followed.
3. Removal of non-friable ACM is categorized by OR OSHA and DEQ as Class 3 asbestos work and does not require a licensed asbestos contractor if the material can be handled, transported, and disposed of in a way that prevents it from becoming friable and releasing fibers.
4. *Whenever there is more than three linear feet or three square feet of non-friable ACM, a DEQ ASN-6 DEQ Notification Form, Non-friable Asbestos Abatement (see Appendix 61) is required five days prior to starting any asbestos abatement projects. No DEQ ASN-6 Notification Form is required if the non-friable ACM is less than three linear feet or less than three square feet. However, DEQ provides a process for when ACM is encountered during emergency repairs or unexpected events as follows:*
- a. **Emergency Repair or Unexpected Event of Non-friable ACM**  
 In most cases, removal of non-friable ACM in the City of Pendleton is an *unexpected event* that results when ACM pipe is encountered during a repair to the water or wastewater pipe system. Under OAR 340-248-0260 (1)(d) and (e), the DEQ may waive the five-day notification requirement whenever an emergency repair or unexpected event asbestos abatement project occurs, and the non-friable ACM is equal to or greater than three linear feet or three square feet. The DEQ Pendleton office must be notified before commencing work. If the emergency repair or unexpected event occurs on a weekend or holiday, then the DEQ Pendleton office must be called by 09:00 am on the next working day. Their phone number is 541-278-2646.  
  
 A DEQ ASN-6 *DEQ Notification Form, Nonfriable Asbestos Abatement*, must still be filed and the appropriate fee paid within three days after 'emergency repair' or 'unexpected event' ACM abatement work commences. Supervisor must coordinate with city finance accounts payable office to ensure check is processed.
  - b. **Planned Repairs of Non-friable ACM**  
 Submit an DEQ ASN-6 *DEQ Notification Form, Nonfriable Asbestos Abatement* five days prior to removal of non-friable ACM. Form can be electronically submitted or faxed to the DEQ Pendleton office. NOTE: If the ACM material is less than three linear feet or less than three square feet, then DEQ ASN-6 form is not required.
5. Follow these guidelines for handling and disposal of non-friable ACM:
- a. Wear appropriate PPE, which may include:
    - (1) Eye protection;
    - (2) Disposable coveralls or washable rain gear;
    - (3) Rubber gloves
    - (4) Boots that can be washed, such as rubber boots; and
    - (5) If needed, a HEPA P-100 (or better) respirator (high-efficiency particulate air) provides the level of filtration protection needed for asbestos fibers.  
(Note: See paragraph H. 1. above)



7.

- b. Keep the material wet at all times.
- c. Do not mix ACM with other materials (spoils) during removal. Care should be taken to keep ACM separated and as intact as possible.
- d. Do NOT blow out with compressed air; do NOT dry sweep; and do NOT vacuum with a non-HEPA rated vacuum cleaner.
- e. Do NOT sand, saw, grind, or chip AC pipe.
- f. Keep the material substantially intact in predominantly whole pieces and contained. If ACM must be cut, follow only approved DEQ/OR OSHA tools and procedures must be used. Approved tools include snap cutters and/or roll cutters.
- g. All non-friable ACM must be double-bagged or double-wrapped. This will ensure no asbestos fibers could be released into the atmosphere if for some reason the ACM is rendered friable.
- h. After bagging or wrapping, all non-friable ACM must be affixed with “Asbestos Warning” labels and then placed in the designated asbestos disposal bin.
- i. Dispose of the bagged/wrapped ACM material at an approved landfill. Finley Buttes Regional Landfill is the closest DEQ approved landfill to Pendleton that accepts asbestos waste material.
- j. If at any time the material becomes crumbled, shattered, or pulverized, it is no longer non-friable. At that point, follow the instructions in paragraph G. above.

## **I. ASBESTOS WASTE DISPOSAL**

1. City staff and all asbestos-abatement contractors will follow City rules as well as the Oregon OSHA, DEQ, and landfill requirements. The DEQ has designated three entities in any approved waste disposal operation: 1) the waste generator; 2) the waste transporter and 3) the waste disposal operator. For waste disposal operations pertaining to the City of Pendleton, the City of Pendleton is the waste generator, the waste transporter is Pendleton Sanitary Service, Inc (PSSI)., and the waste disposal operator is Finley Buttes Regional Landfill.
2. ACM can be legally disposed of at DEQ-approved Oregon landfills. Finley Buttes Regional Landfill is the closest DEQ approved landfill to Pendleton that accepts asbestos waste material. Pendleton Sanitary Service, Inc., (PSSI) is approved to accept ACM for transportation with the following conditions:

- a. Non-friable ACM will be accepted if placed in an approved drop box where it is segregated from all other wastes.
- b. Non-friable ACM must be double-bagged or double wrapped, labelled and placed in a drop box where it is segregated from all other wastes.
- c. For non-friable ACM, two forms must be submitted to the waste transporter PSSI at the time of disposal: 1. DEQ's *Asbestos Waste Shipment Report Form* (ASN-4), (see Appendix 60); and 2. A "Special Waste Application" form (see Appendix 62) from Finley Buttes Regional Landfill
  - (1) Prepare/fill out a DEQ ASN-4 *Asbestos Waste Shipment Report Form* under the "waste generator" section. Keep a copy of the form after this section is filled out. The waste transporter (PSSI) and the waste disposal site operator (Finley Buttes Regional Landfill) must also fill out their respective sections of the ASN-4 form and maintain a copy of the form. The waste disposal site operator (Finley Buttes Regional Landfill) are required by DEQ to send a copy of the completed ASN-4 form to the waste generator (City of Pendleton) no later than 30 days after receiving the ACM waste. Any waste quantity discrepancies must be reconciled between the waste generator (City of Pendleton) and the waste disposal site operator (Finley Buttes Regional Landfill) and reported to the DEQ by the waste disposal site operator(s).
  - (2) Finley Buttes usually accepts the material for disposal within 24 hours. Contact the waste disposal site operator, Finley Buttes Regional Landfill (541-481-2233) if there are any questions regarding filling out the on-line form. The form should be filled out and given to the ACM transporter PSSI. NOTE: This form can be accessed at: [www.wasteconnections.com](http://www.wasteconnections.com). Then click on the following:
    - (1) Services
    - (2) Special Wastes
    - (3) Submit Waste Profile
    - (4) State of Oregon on the map provided
    - (5) Finley Buttes
    - (6) Select either, New Profile or Existing Profile
    - (7) Fill out the appropriate Profile
    - (8) Submit Profile
    - (9) Print copy

## J. ASBESTOS - HEALTH EFFECTS - GENERAL AWARENESS TRAINING

1. Initial 16-hour Class III Asbestos Operations and Maintenance training will be provided to all employees who have responsibilities involving the maintenance and repair of ACM and PACM that may be disturbed. Additionally, General Asbestos Awareness refresher training will be provided on an annual basis to these same aforementioned employees. Training is open to all staff, and especially to those project managers who may have responsibilities for ensuring that the outside asbestos abatement contractors follow City, OR-OSHA, and DEQ procedures.

2. General asbestos awareness training will cover the following topics:

a. Basic Information

- (1) Asbestos has been used widely in building materials and in products that needed to be fireproof. In 1985, EPA estimated that 31,000 schools and some 733,000 commercial buildings had asbestos products in them.
- (2) Asbestos was used because the mineral is fire resistant; can be woven or used to provide strength and consistency to a product; and is resistant to chemicals.
- (3) Asbestos is made up of fibers which are made up of bundles of smaller and smaller fibers called fibrils. When asbestos material is disturbed, countless numbers of very small fibrils, microns in size (millionths of a meter), are released. Once a small particle becomes airborne it can remain suspended almost indefinitely, even in a very still environment.
- (4) In the United States, two primary forms of asbestos were widely used:

**Amosite**

- Resistance to heat and chemicals, and found extensively in pipe insulation, friction materials, roofing and flooring materials.
- Characteristically a rigid, brittle fiber which cannot be woven.
- Now banned in the U.S. due to the higher cancer health risk associated with amosite.

**Chrysotile**

- A long, wavy, hair-like fiber that is easily woven. Chrysotile is used in asbestos clothing products, and extensively in many forms of insulation.
- The shorter mill-end material is now being substituted for amosite.

b. Known locations of ACM and PACM in buildings.

c. Information on how to recognize ACM, PACM, and ACM damage.

d. Health Effects

- (1) The primary effects from exposure to asbestos are to the respiratory system. Asbestos exposure is also linked to effects on the gastrointestinal system.
- (2) The actual particle size of the asbestos that is released is important. Larger fibers (75 micron size) will be trapped in the nose. Smaller fibers (1 - 5 microns in size) are trapped in the bronchioles and lungs. Particles of this size are carried into the deepest part of the lungs past the protective mechanisms in the nose, sinuses, and larynx.

- (3) The asbestos fibers are crystalline minerals and are very persistent which means that the fibers do not degrade in biological tissue. Once breathed deep into the lungs, the fibers may remain there indefinitely. The mechanism of damage to tissue appears to be associated with the mechanical irritation caused by the sharp ends of the fibers.
- (4) There are those who contend that there is no safe limit for exposure to asbestos. The current epidemiological studies, however, do suggest a typical dose-response relationship for most of the asbestos related diseases. Thus, the higher the exposure, the higher the incidence of disease is seen. Studies have also indicated a higher incidence of disease associated with amosite-type asbestos.
- (5) Asbestos-related diseases typically develop 30-40 years subsequent to the beginning of the exposure. Workers who have been heavily exposed have shown symptoms within 5-10 years, but this is not typical.

e. Most Common Diseases Associated with Asbestos Exposures:

- (1) **Asbestosis of the lung**-- a fibrotic degeneration of the lung, usually associated with chronic exposure to asbestos. The disease restricts the ability of the lungs to expand and causes scarring of the lung tissue. This causes progressive shortness of breath, respiratory failure, and cardiac decompensation, which is the heart's inability to maintain circulation because of reduced oxygen levels. The disease is progressive even in the absence of continued exposure to asbestos.
- (2) **Lung Cancer**-- cancers of the lung are seen at higher incidence rates in individuals who have been exposed to asbestos. The incidence rate is 90 times greater for workers who smoked tobacco and were exposed to asbestos than workers only exposed to asbestos.
- (3) **Mesothelioma of the lung pleura**-- this is a rare form of cancer which is almost entirely related to asbestos exposure. The disease is not curable and individuals with mesothelioma rarely live more than one year after diagnosis. Mesothelioma is not associated with smoking and may occur following exposure to low levels of asbestos and a level of dust exposure defined as a "safe" level for lung cancer risks.
- (4) **Gastrointestinal Cancers**-- asbestos workers exhibit higher rates of cancers of the stomach, intestines, bowel, and rectum.
- (5) **Pleural Plaques**-- plaques are seen on the X-Rays of asbestos workers. These are dense strands of collagen (connective tissue proteins) showing as opaque patches on the X-Rays. These plaques can be seen with no disease and do not reflect severity of disease tissue but indicate asbestos exposure.

f. Relationship between Smoking and Asbestos Exposure

The 1985 Surgeon General's report on "The Health Consequences of Smoking - Cancer and the Chronic Lung Disease in the Workplace", reports on the research findings about the risk of developing lung cancer and lung diseases among asbestos-

exposed workers and asbestos- exposed workers who smoke. The following conclusions were drawn by the report:

- (1) Asbestos exposure can increase the risk of developing lung cancer in both cigarette smokers and nonsmokers. The risk in cigarette-smoking asbestos workers is greater than the sum of the risks of the independent exposures.
- (2) The risk of developing lung cancer in asbestos workers increases with increasing number of cigarettes smoked per day and increasing cumulative asbestos exposure.
- (3) The risk of developing lung cancer declines in asbestos workers who stop smoking; however, the risk of developing lung cancer appears to remain significantly elevated even 25 years after cessation of exposure.
- (4) Cigarette smoking and asbestos exposure appear to have an independent and additive effect on lung function decline. Nonsmoking asbestos workers have decreased total lung capacities (restrictive disease). Cigarette-smoking asbestos workers develop both restrictive lung disease and chronic obstructive lung disease.
- (5) Asbestos exposure is the predominant cause of interstitial fibrosis (asbestosis) in populations with substantial asbestos exposure.
- (6) The promotion of smoking cessation should be an intrinsic part of efforts to control asbestos-related death and disability. For workers for whom asbestos exposure has ceased, the single most important intervention that would alter their future disease risk is the cessation of cigarette smoking.

## **K. MEDICAL SURVEILLANCE**

There is no need for City employees to be part of an asbestos medical surveillance program, but there is a requirement that the asbestos abatement contractors ensure that their employees are part of a comprehensive medical program.

## **L. RECORDKEEPING**

1. If an employee is exposed to asbestos, the following records will be maintained by the Administrative Services Officer/Recorder for a period of 30 years.
  - a. Date of exposure measurements;
  - b. The operation involving exposure to asbestos which is being monitored;
  - c. Sampling and analytical method(s) used;
  - d. Number, duration, and results of the samples; and
  - e. Name, social security number, and exposure of the employee(s) who was exposed.

2. Training records will be retained by the Administrative Services Officer/Recorder for one year beyond the last date of employment by the employee.
3. Records will be made available to the Oregon OSHA, an affected employee, a former employee, and designated representatives upon written request.
- 8.



# CHAPTER 17: LEAD COMPLIANCE PROGRAM

## A. PURPOSE

The purpose of the Lead Compliance Program is to provide a safe and healthful work place for all employees and to protect our employees from occupational exposure to lead.

## B. APPLICABLE LEGAL STANDARDS

1. Federal OSHA 29 CFR 1910.1025
2. Oregon OSHA OAR 437 Division 2, Subdivision Z, Toxic & Hazardous Substances
3. Oregon OSHA OAR 437 Division 3, Subdivision D, 1926.62, Occupational Health &
4. Environmental Controls

## C. DEFINITIONS

1. **Abatement:** the permanent removal or elimination of lead-based paint hazards from surfaces and from soil. Permanent means that the treatment must last 20 years.
2. **Action Level:** exposure to an airborne concentration of lead of 30 micrograms per cubic meter of air (30  $\mu\text{g}/\text{m}^3$ ) averaged over an 8-hour period.
3. **Lead:** metallic lead, all inorganic lead compounds, and organic lead soaps. All other organic lead compounds are excluded from this definition.
4. **Permissible Exposure Limit (PEL):** the standard sets a permissible exposure limit (PEL) of 50 micrograms of lead per cubic meter of air (50  $\mu\text{g}/\text{m}^3$ ), averaged over an 8-hour workday which is referred to as a time-weighted average (TWA).

## D. GENERAL RESPONSIBILITIES

1. **Employer (City).** The employer is responsible to:
  - a. Administer the Lead Compliance Program.
  - b. Conduct a lead exposure assessment when job tasks have potential for lead exposure;
  - c. Ensure that lead abatement work is conducted only by licensed lead abatement contractors;
  - d. Utilize engineering controls and work practice controls wherever practical to reduce lead exposures to the lowest feasible level;
  - e. Ensure that lead wastes are properly disposed of;
  - f. Provide training to employees who may come in contact with lead or lead-based paint; and
  - g. Maintain records in conjunction with this program.
2. **Employees.** The employee is responsible to:
  - a. Follow this Lead Compliance Program.
  - b. Take an active part in training and request additional information if he/she has questions or does not understand the training;
  - c. Report to the Supervisor if he/she suspects lead-based paint may be present; and
  - d. Wear appropriate PPE.



## E. LEAD EXPOSURE ASSESSMENT

1. Specific job tasks with potential for lead exposure will be identified by the Employer (City). These include, but are not limited to, the following activities involving lead-based paint:
  - a. Hand scraping and sanding surfaces;
  - b. Using extreme heat on painted surfaces;
  - c. Using power sanders, grinders, and saws;
  - d. Using power washers;
  - e. Using chemical paint strippers; and
  - f. Manual demolition.
2. A lead exposure assessment will be done by a certified inspector prior to removal, demolition, or renovation on all potentially lead-contaminated facilities.
3. The assessment will include, but will not be limited to, the following:
  - a. Initial exposure monitoring. Employees will be informed about the exposure monitoring.
  - b. Remonitoring of work operations will be done based on the results of initial monitoring or whenever the employer has any other reason to suspect a change which may result in new additional exposure to lead.
  - c. Within 5 working days after the receipt of monitoring results, the employer will provide the employees with a copy of the sample results or post the result summary for the area. If lead exposures exceeding the PEL are found, the employer shall include in the written notice a description of the corrective action taken or to be taken to reduce exposure.
4. The Supervisor or Project Manager is responsible to notify contractors who perform work on City facilities of the results of any lead exposure assessments on the facilities in question.

## F. ABATEMENT/CLEANUP PROCEDURES

1. When the primary purpose of the work is removing lead-based paint, the work is considered abatement. Only persons certified by the Oregon Health Division can do abatement work. **It is the City's policy that lead abatement work will only be conducted by licensed lead abatement contractors.**
2. General maintenance and cleanup may be conducted by city staff using engineering controls and work practice controls wherever practical to reduce lead exposures to the lowest feasible level. These include:
  - a. Minimize the amount of lead-based paint you disturb.
  - b. Contain the work area and cover or remove belongings.
  - c. Keep the material wet while working with it.
  - d. Contain and filter wastewater.
  - e. Use a HEPA vacuum where vacuuming is necessary.
  - f. Wear appropriate PPE, which may include:
    - i. Disposable overalls or similar full-body work clothing;
    - ii. Disposable gloves, hats and shoe covers; and
    - iii. Face shields, vented goggles, or other appropriate eye and face protection.
  - g. Where engineering and work practice controls do not reduce employee exposure to below the PEL, the employer will supplement these controls with respirators. Where the use of respirators

is required, use will comply with the City's *Respiratory Protection Program*, Chapter 14 of this Safety Manual.

## G. LEAD WASTE DISPOSAL

1. Some lead waste and lead-based paint waste can legally be disposed of at approved Oregon landfills. Pendleton Sanitary Service, Inc., (PSSI) accepts lead waste that is NOT classified as hazardous waste.
2. There are three categories of lead waste:
  - a. **Liquid lead-based paint:** needs tested to determine if it in fact does meet the threshold for hazardous waste. If it is classed as hazardous waste, it must be disposed of at a hazardous waste facility. If it does not reach the hazardous waste limit, it can be poured into sawdust, dirt, kitty litter, etc., and dried out for disposal at PSSI.
  - b. **Lead paint chips:** from scrapings from buildings or houses must also be tested to determine the lead level. If it meets the hazardous waste limit, then it must be disposed of as hazardous waste at a hazardous waste facility. If it does not reach the hazardous waste limit, it can be disposed of at PSSI.
  - c. **Lead paint on building materials:** can be disposed of at PSSI without testing.

## H. LEAD—HEALTH EFFECTS—GENERAL AWARENESS TRAINING

**NOTE: This program does not meet Oregon Health Division worker training requirements as outlined in OAR 333 Division 69, Certification of Individuals and Firms Engaged in Lead-Based Paint Activities.**

1. General lead awareness training will be provided to all of our maintenance staff who may come into contact with lead and lead-based paint and to staff who may be project managers, responsible for ensuring that outside contractors meet all aspects of lead compliance regulations.
2. General lead awareness training will cover the following topics:
  - a. Basic Information
    - i. Lead is a soft, blue-gray naturally occurring metal.
    - ii. It has been used for centuries for medicinal, industrial, and commercial purposes.
    - iii. Leaded gasoline was the primary source of lead in the environment before the refiners removed lead from gasoline.
    - iv. Common sources of lead include: lead paint; soil contaminated by lead paint or leaded gasoline; lead in pipes and solder joints; chipping sinks and bathtubs; older play equipment; some hobby and craft supplies; food served in lead-glazed pottery; and certain traditional remedies and cosmetics.
    - v. The primary source of lead contamination now is lead paint. In general, the older a building, the greater the chance that it contains lead-based paint. Houses built before 1950 are very commonly painted with lead paint.
  - b. Health Effects
    - i. Those at greatest risk for the harmful effects of lead poisoning are small children, ages birth to 6. Their developing bodies are sensitive to even small amounts of lead. Most childhood lead poisoning results from inhaled or ingested lead-paint dust. Some of the health and behavioral problems associated with lead poisoning are: learning disabilities; brain damage; decreased IQ; attention deficit disorder; hyperactivity; nervous system damage; brain swelling; major organ failure (kidneys, liver); coma; and death.
    - ii. Adults can also be affected by lead poisoning. Those health effects include: problems with reproduction; harm to the fetus; high blood pressure; headaches; digestive problems; memory and concentration difficulties; kidney damage; and mood swings.

- c. Operations that could result in lead exposure;
  - d. Purpose and use of appropriate PPE;
  - e. Engineering controls and work practices in place to reduce lead exposure; and
  - f. Applicable legal standards will be made available to affected employees.
3. Affected employees will be trained prior to the first exposure and annually thereafter.

#### **I. MEDICAL SURVEILLANCE PROGRAM**

There is no need for City employees to be part of an asbestos medical surveillance program because no City employees are exposed at or above the action level for more than 30 days per year. However, medical surveillance will be made available to any employee exposed to lead at or above the action level.

#### **J. RECORDKEEPING**

1. The City will maintain copies of all compliance plans, employee training records, any medical records of employees exposed to lead, and current lead monitoring results. Records will be maintained by the Administrative/ Services Officer/Recorder.
2. All lead records must be kept for 40 years or for the duration of employment plus 20 years, whichever is longer.

# CHAPTER 18: ERGONOMICS PROGRAM

## A. PURPOSE

The goal of the Ergonomics Program is to eliminate or reduce worker exposure to hazards or work conditions which lead to musculoskeletal disorders which are injuries and disorders of the muscles, nerves, tendons, ligaments, joints, cartilage and spinal discs.

## B. APPLICABLE LEGAL STANDARDS

1. Oregon Revised Statutes, ORS 654.010: "Employers to furnish safe place of employment"
2. Oregon OSHA Division 1: "Self-Insured requirements for ergonomic assessments and programs"

## C. DEFINITIONS

1. **Ergonomics:** the science that addresses human performance and well-being in relation to job, tools, equipment, and environment. Two additional terms that are commonly used in conjunction with ergonomics:
2. **Biomechanics:** the study of movement of body segments (fingers, hands, arms, back) to describe the abilities and limitations of the human body.
3. **Anthropometry:** the analysis of dimensions and proportions of the human body in relation to workstation design, equipment, furniture and tools.
4. **Musculoskeletal Disorder (MSD):** injuries and disorders of the muscles, nerves, tendons, ligaments, joints, cartilage and spinal discs. They do not include injuries resulting from slips, trips, falls, or similar accidents. Examples of MSDs include carpal tunnel syndrome, tendonitis, and low back pain.
5. **Job Hazard Analysis (JHA):** a tool or process to make a job safe before hazards become accidents through the identification of hazards associated with a specific job and planned actions to control or eliminate the hazards. A JHA provides a formal systematic method that when used consistently can provide the basic framework of a pro-active safety program.
6. **Hazard:** a potential danger which can result in injury or illness.

## D. GENERAL RESPONSIBILITIES

1. **Management.** It is the direct responsibility of the management to ensure that evaluations of workplace design, layout and operation, and assistance with job site modifications utilizing an ergonomic approach are conducted. The primary records of the ergonomic surveys and findings will be maintained by the supervisor or manager of the group or department receiving the evaluation.
2. **Safety Committee.** It is the responsibility of the Safety Committee to conduct basic ergonomic inspections.
3. **Employees.** The employee is responsible to:
  - a. Report MSD signs and symptoms to the Supervisor;
  - b. Notify the Supervisor about conditions with potential ergonomic hazards;
  - c. Report to the Supervisor any action he/she believes would be helpful in avoiding exposure or injury that could lead to MSD;
  - d. Participate in a Job Hazard Analysis when applicable; and
  - e. Follow recommendations on how to reduce or eliminate hazards identified in the Job Hazard Analysis.

## **E. JOB HAZARD ANALYSIS AND CONTROL**

1. The following basic principles are to be used during review of workstations for ergonomic related problems. It is our policy to use a Job Hazard Analysis tool in the identification of ergonomic issues and solutions.
2. The Job Hazard Analysis is done to identify the “ergonomic risk factors” that result in MSD hazards. Recommendations on how to eliminate or reduce the hazards are made based on the extent feasible and may involve an incremental abatement process.
3. The following procedure will be followed when performing a Job Hazard Analysis:
  - a. Employees will be interviewed about whether performing the job poses physical difficulties and, if so, which physical work activities or conditions of the job they associate with the difficulties.
  - b. Employees will be observed performing the job to identify which physical work activities, workplace conditions and ergonomic risk factors are present.
  - c. Evaluate the ergonomic risk factors in the job to determine the MSD hazards associated with the covered MSD. As necessary, we will evaluate the duration, frequency and magnitude of employee
  - d. Identify, assess and implement feasible controls to eliminate or materially reduce the MSD hazards. This includes prioritizing the control of hazards.
  - e. Track progress in eliminating or materially reducing the MSD hazards. This includes consulting with employees in problem jobs about whether the implemented controls have eliminated or materially reduced the hazards.
  - f. Identify and evaluate MSD hazards when you change, design, or purchase equipment or processes in problem jobs.

## **F. TYPES OF CONTROLS**

1. Any combination of engineering, administrative and/or work practice controls can be used to eliminate or materially reduce MSD hazards.
2. Personal protective equipment may be used to supplement engineering, work practice and administrative controls, but may only be used alone where other controls are not feasible.

## **G. TRAINING**

1. Persons involved with conducting ergonomic assessments will be trained on how to identify ergonomic risks, workplace design, layout and operation, and job site modifications utilizing an ergonomic approach.

# CHAPTER 19: CRANE & DERRICK OPERATING PROCEDURES

## A. PURPOSE

City of Pendleton has adopted the ***Crane and Derrick Operating Procedures*** to protect employees from potential hazards that can be created by their usage.

## B. APPLICABLE LEGAL STANDARDS

1. Federal OSHA 29 CFR 1910.179, 1910.180, & 1910.181
2. Oregon OSHA, OAR 437, Division 2, Subdivision N, Section 0228
3. Oregon OSHA, OAR 437, Division 2, Subdivision N, §1910.179, 1910.180, & 1910.181
4. Oregon OSHA, OAR 437, Division 3, Subdivision N, Section 0081

## C. DEFINITIONS

1. **Authorized Employee (Operator):** employee who has been designated by management to operate a crane in his/her work area. Authorized employees will be trained and supervised in proper operation and trouble shooting.
2. **Certified Operator:** an employee who has proof of certification to operate a crane of 5 tons or greater. Specialized training is required to become a certified operator.
3. **Crane:** a machine for lifting and lowering a load and moving it horizontally, with the hoisting mechanism an integral part of the machine. Cranes, whether fixed or mobile, are driven manually or by power.
4. **Derrick:** an apparatus consisting of a mast or equivalent member held at the head by guys or braces, with or without a boom, for use with a hoisting mechanism and ropes.
5. **Hoist (noun):** an apparatus, which may be part of a crane, exerting a force for lifting or lowering.
6. **Hoist (verb):** all crane or derrick functions such as lowering, lifting, swinging, booming in and out or up and down, or suspending a personnel platform.
7. **Hoist motion:** the motion of a crane which raises and lowers a load.
8. **Preventive Maintenance:** the regularly required maintenance checks and recommended manufacturer's preventive activities.

## D. GENERAL RESPONSIBILITIES & TRAINING

1. **Employer (City).** The employer is responsible to:
  - a. Establish a written procedure for the safe operation of all cranes and derricks.
  - b. Ensure that employees who operate cranes or derricks are properly trained and have sufficient practical experience to operate the equipment in a safe manner. **ONLY CERTIFIED OPERATORS ARE PERMITTED TO OPERATE CRANES OF 5 TONS OR GREATER.**
  - c. Ensure that required maintenance checks and preventive maintenance are done on all cranes and derricks.
  - d. Maintain records of employee training and equipment inspection as required.
2. **Employees.** The employee is responsible to:
  - a. Follow the Crane and Derrick Operating Procedures.

- b. Immediately report to the Supervisor any unsafe conditions or equipment.
- c. Not use unsafe equipment until it is repaired.

## E. PROCEDURES

Note: A full copy of the OSHA regulations specific to each type of crane or derrick is available from the Regulatory Specialist upon request.

1. Cranes and derricks will be operated by authorized personnel only. **ONLY CERTIFIED OPERATORS ARE PERMITTED TO OPERATE CRANES OF 5 TONS OR GREATER.**
2. Any trainee learning to use lifting equipment must be under the direct supervision of an authorized operator.
3. Cranes and derricks will be operated only in accordance with the manufacturer's specifications, limitations, and operating instructions.
4. The manufacturer's rated load capacity will be conspicuously posted on all cranes and derricks. The operator must be sure he/she fully understands the load chart before operating the crane.
5. Loads lifted will not exceed the maximum capacity of the crane or derrick and its lifting attachments.
6. A crane or derrick in an unsafe working condition will not be used under any circumstances.
7. Only authorized persons will make electrical or mechanical repairs on cranes and derricks.
8. A crane or derrick will be inspected prior to each use by the operator to make sure it is in safe operating condition. (See [Appendix 39](#)) These inspections should include, but not be limited to, inspection of the following:
  - a. Functional operating mechanisms;
  - b. Signs of excessive wear of equipment, including weld cracks, loose bolts, or distorted parts;
  - c. Fluid levels or leaks and condition of tires;
  - d. Deterioration or leakage in lines, tanks, valves, drain pumps, and other parts of air or hydraulic systems; and
  - e. Hoisting equipment (rigging), including hooks, rings, links, chains, wire ropes, slings and other lifting equipment.
9. All cranes and derricks will be thoroughly inspected annually by a competent person. (Note: City does not own a crane or derrick but must occasionally rent one. City will therefore rely on the rental agency to conduct annual inspections.)
10. No person will be allowed to ride a load or hook.
11. The crane operator is responsible for the load.
12. Signals or operating instructions will come from one authorized employee only. Utilize SAE Standard J1307 Hand Signals. (See [Appendix 40](#))
13. The operator will have a clear view of work and equipment at all times.
14. The crane will have adequate clearance from any power lines.
15. Only approved rigging equipment will be used. This includes hooks, rings, links, chains, wire ropes, slings and any other lifting equipment.
16. Deformed, defective, frayed, cut, kinked, cracked or rusted rigging equipment will be taken out of service and will not be used.
17. Rigging equipment will be used according to manufacturer's recommendations.
18. Before a load is lifted, the load will be inspected by the crane operator for loose parts or objects and to ensure it is well-secured and properly balanced.

19. The operator will ensure that the load is secured and properly balanced before it is lifted more than a few inches off the floor or support.
20. The operator will test the brake each time a load is lifted by raising the load a few inches and applying the brake.
21. All persons must stand clear of suspended loads and refrain from getting between the load and a solid surface, to avoid being pinned or caught by a falling or moving load.
22. Tag lines will be used to guide the load.
23. The operator must remain in the cab and at the controls any time a load is suspended.
24. When raising or lowering a load, the operator will proceed carefully, making sure that the load is under control at all times.
25. Lifting hooks and fastenings will not be removed until material is at rest in a stable position or safely secured by other fastenings.
26. When moving a crane, make sure the hook and/or the load will clear all obstacles.
27. When moving a crane, never exceed recommended operating speeds.
28. A carbon dioxide or dry chemical fire extinguisher will be kept in the cab of or the vicinity of the crane or derrick.

## **F. RECORDKEEPING**

1. Records of all crane or derrick operators' training will be maintained by the Supervisor or designee.
2. Records of crane or derrick inspections will be maintained, as applicable.
3. (NOTE: City does not own a crane or derrick but must rent one from time to time. City will rely on the rental agency to maintain annual inspection records.)



# CHAPTER 20: CONTRACTOR SAFETY & NOTIFICATION POLICY

## A. PURPOSE

It is the City's goal to provide a safe and healthful work environment for all its employees and for outside contractors and their employees performing work in City buildings or facilities. This policy applies to all contractors hired including, but not limited to, contractors for: construction, electrical, confined space entry, building renovation and remodeling.

## B. APPLICABLE LEGAL STANDARDS

1. Federal OSHA 29 CFR 1910.10
2. Oregon OSHA, Division 3, Subdivision B, § 1910.10
3. No contractor or subcontractor shall require any laborer to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his/her health.

## C. DEFINITIONS

1. **Contractor:** one that contracts to perform work or provide supplies for another organization or individual; a person, business or corporation which provides goods or services to another entity under terms specified in a contract.
2. **Project Manager:** Supervisor or other person designated by the City to have overall responsibility to oversee a project.
3. **Subcontractor:** An individual or business contracting to perform part or all of another's contract.

## D. GENERAL RESPONSIBILITIES

1. **Project Manager.** It is the Project Manager's responsibility to:
  - a. Determine the scope of contract work and prepare an adequate contract and/or purchase order for the services;
  - b. Provide copies of pertinent safety programs from the City's Safety Manual to the Contractor upon request;
  - c. Coordinate with the Contractor or contractor representative any joint work done between the Contractor or Sub-Contractor and City employees and establish mutually agreed-upon safety procedures for any joint work so all affected employees remain safe;
  - d. Immediately notify the Contractor or contractor representative if the Project Manager witnesses any unsafe work-related activities by the Contractor's or Sub-Contractor's employees;
  - e. Respond to specific safety questions;
  - f. Provide the Contractor with appropriate notification of known hazards and document that the information has been provided (Appendices 41, 42, 43, 44, 45, 46 or 47); and
  - g. Conduct periodic follow-up with the Contractor or contractor representative.
2. **Contractor.** It is the Contractor's or contractor representative's responsibility to:
  - a. Ensure the Contractor and all Sub-Contractors follow all federal and state OSHA rules and regulations;

- b. Coordinate with the Project Manager any joint work done between the Contractor or Sub-Contractor and City employees and establish mutually agreed-upon safety procedures for any joint work so all affected employees remain safe;
- c. Respond to any safety-related issues brought up by the Project Manager;
- d. Report all hazards, incidents, and accidents to the Project Manager;
- e. Notify the Project Manager of any hazardous materials or chemicals brought onto a job site and provide all pertinent MSDSs to the Project Manager;
- f. Notify the Project Manager of any asbestos, asbestos-containing material (ACM), or lead paint encountered while working on the project;
- g. Notify the Project Manager of any safety issues or problems encountered while working on the project;
- h. Return all pertinent Contractor Notification forms signed to the Project Manager (Appendices 41, 42, 43, 44, 45, 46 or 47); and
- i. Conduct periodic follow-up with the Project Manager.

## E. GENERAL INFORMATION

1. Contractors will be notified by the Project Manager of known specific hazards their employees may be exposed to. This notification is not designed to take over the Contractor's or Sub-Contractor's safety responsibilities to its employees but to provide appropriate notification of known hazards.
2. Contractors performing work for the City may request a copy of the City's Safety Manual or any chapters that are pertinent to the work performed. Contractors should use [Appendix 41](#) Safety Manual Request Checklist, to request this information from the Project Manager.
3. The Project Manager will ensure the Contractor is provided with requested chapters of the Safety Manual and the Contractor returns a signed statement acknowledging chapters and information received. (See [Appendix 41](#), Safety Manual Request Checklist)

## F. SPECIFIC INFORMATION

### 1. Hazard Communication.

- a. The Project Manager and the Contractor will inform each other, using the [Appendix 46](#), Hazardous Chemical or Atmosphere Notification form of any known hazardous chemical(s) or atmosphere(s) and needed controls including, but not limited to, the following:
  - i. Hazardous chemicals to which they may be exposed and the location of the MSDS for same;
  - ii. Biohazards, such as those associated with wastewater, to which they may be exposed; and
  - iii. Precautions the employees may take to lessen the possibility of exposure, including personal protective equipment.
- b. The Project Manager will obtain a signed copy of the Hazardous Chemical or Atmosphere Notification form ([Appendix 46](#)).

### 2. Asbestos/Lead.

- a. If the Contractor is hired to perform work for the City, the Project Manager is responsible to:
  - i. Inform the Contractor of the known presence of asbestos or asbestos-containing materials (ACM) or the known presence of lead paint and obtain signed copies of

the Asbestos Abatement Notification ([Appendix 42](#)) and/or Lead Abatement Notification (Appendix 43) form(s); and

- ii. Review the plans with the Contractor to determine the scope of the work and assess the potential for exposure to asbestos, ACM, or lead paint.
- b. The Contractor is responsible to notify the Project Manager of the location of any asbestos, ACM, or lead paint encountered while working on the project.

### 3. Lockout/Tagout.

- a. If the Contractor is hired to perform work for the City involving the need to control hazardous energy, the Project Manager is responsible to:
  - i. Inform the Contractor of the type and magnitude of any known hazardous energy associated with the machines or equipment that might affect them and the methods to control the energy and obtain a signed copy of the Energy Control Notification form ([Appendix 44](#));
  - ii. Establish mutually agreed-upon procedures for lockout/tagout of machinery and equipment; and
  - iii. Coordinate operations with the Contractor to ensure that all affected employees are notified of the application and removal of lockout and/or tagout devices.
- b. The Contractor is responsible to:
  - i. Follow all OSHA-required lockout/tagout procedures;
  - ii. Coordinate operations with the Project Manager to ensure that all affected employees are notified of the application and removal of lockout and/or tagout devices; and
  - iii. Inform the Project Manager after the work is complete if the Contractor encountered any problems that would require changes in the City's lockout/tagout procedures.

### 4. Confined Space.

- a. If the Contractor is hired to perform work for the City that requires confined space entry, the Project Manager is responsible to:
  - i. Coordinate with the Contractor to determine if any permit-required or non-permit-required space work is involved and obtain a signed copy of the Confined Space Notification form ([Appendix 45](#));
  - ii. Inform the Contractor of any known special hazards that have been identified in the space;
  - iii. Inform the Contractor of any known precautions City employees have taken during entry into the space;
  - iv. Coordinate entry operations with the Contractor if City employees will also be entering the space; and
  - v. Review all the necessary Confined Space Entry permits.
- b. The Contractor is responsible to:
  - i. Ensure that all necessary Confined Space Entry permits are completed and provide them to the Project Manager upon request;

- ii. Coordinate entry operations with the Project Manager if City employees will also be entering the space; and
- iii. Inform the Project Manager if any problems were encountered by the Contractor that would require changes in the City's Confined Space Entry procedures.

#### 5. **Hazardous Atmospheres.**

- a. If the Contractor is employed to work for the City in a known hazardous atmosphere, the Project Manager is responsible to:
  - i. Inform the Contractor of any known hazardous atmosphere or potentially hazardous atmosphere and obtain a signed copy of the Hazardous Chemical or Atmosphere Notification form ([Appendix 46](#)); and
  - ii. Coordinate entry operations and establish mutually agreed-upon procedures if both Contractor and City employees will be working in the hazardous atmosphere.
- b. The Contractor is responsible to:
  - i. Coordinate entry operations with the Project Manager and establish mutually agreed-upon procedures if both Contractor and City employees will be working in the hazardous atmosphere; and
  - ii. Inform the Project Manager after the work is complete if any problems were encountered by the Contractor that would require changes in the City's procedures.

#### 6. **Hazardous Waste Notification.**

- a. If the Contractor's work involves removal and disposal of hazardous waste, the Project Manager is responsible to obtain a signed copy of the Hazardous Waste Notification form ([Appendix 47](#)); and
- b. If the Contractor's work involves removal and disposal of hazardous waste, the Contractor is responsible to follow procedures that meet Oregon Department of Environmental Quality (ODEQ) requirements, including proper documentation and transportation, storage and disposal requirements.

7. **Hot Work/Welding.** If the Contractor's work involves riveting, welding, cutting, burning, heating or other hot work, the Contractor is responsible to use extreme caution to ensure that all fire hazards are controlled and to secure any and all applicable permits.

# CHAPTER 21: EXCAVATION SAFETY POLICY & PROCEDURES

## A. PURPOSE

The purpose of this program is to establish requirements to protect the safety and health of employees who work in and around excavations and to meet the requirements of 29 CFR 1926.650 and OAR 437-003 (P). The intent is to provide employees with a written program that defines the requirements for working in excavations and to protect employees from hazards associated with excavation work.

## B. SCOPE

This applies to all open excavations, including, but not limited to, man-made cuts, cavities, trenches or depressions in the earth's surface.

## C. DEFINITIONS

1. **Accepted Engineering Practices:** those requirements which are compatible with standards of practice required by a registered professional engineer.
2. **Actual slope (Slope):** the slope to which an excavation face is excavated.
3. **Aluminum Hydraulic Shoring:** a pre-engineered shoring system comprised of aluminum hydraulic cylinders (crossbraces) used in conjunction with vertical rails (uprights) or horizontal rails (walers). Such system is designed specifically to support the sidewalls of an excavation and prevent cave-ins.
4. **Benching (Benching System):** a method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.
5. **C-60 Soil:** a moist, cohesive soil or a moist dense granular soil which does not fit Type A or Type B classifications but falls between the lower range of a Type B soil to the middle range of a Type C soil. This material is not flowing or submerged and can be cut with near vertical sidewalls and will stand unsupported long enough to allow the shoring to be properly installed. This soil type is not listed in the Excavation Standard.
6. **Cave-In:** the separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.
7. **Cemented soil:** soil in which the particles are held together by a chemical agent, such as calcium carbonate, such that a hand-size sample cannot be crushed into powder or individual soil particles by finger pressure.
8. **Cohesive soil:** clay (fine-grained soil), or soil with high clay content, which has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical side slopes, and is plastic when moist.
9. **Competent Person:** one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
10. **Cross braces:** the horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.
11. **Distress:** a condition of the soil where a cave-in is imminent or is likely to occur.
12. **Dry soil:** soil that does not exhibit visible signs of moisture content.

13. **Excavation:** any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.
14. **Faces or sides:** the vertical or inclined earth surfaces formed as a result of excavation work.
15. **Failure:** the breakage, displacement, or permanent deformation of a structural member or connection so as to reduce its structural integrity and its supportive capabilities.
16. **Fissured:** a soil material that has a tendency to break along definite planes of fracture with little resistance, or a material that exhibits open cracks, such as tension cracks, in an exposed surface.
17. **Granular soil:** gravel, sand, or silt with little or no clay content. Granular soil has no cohesive strength.
18. **Hazardous atmosphere:** an atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, may cause death, illness, or injury.
19. **Kickout:** the accidental release or failure of a cross brace.
20. **Layered system:** two or more distinctly different soil or rock types arranged in layers.
21. **Maximum allowable slope:** the steepest incline of an excavation face that is acceptable for the most favorable site conditions as protection against cave-ins; it is expressed as the ratio of horizontal distance to vertical rise (H:V).
22. **Moist soil:** a condition in which a soil looks and feels damp.
23. **Plasticity:** a property of a soil which allows the soil to be deformed or molded without cracking.
24. **Protective system:** a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.
25. **Ramp:** an inclined walking or working surface that is used to gain access to one point from another and is constructed from earth or from structural materials such as steel or wood.
26. **Registered Professional Engineer:** a person who is registered as a professional engineer in the state where the work is to be performed. A professional engineer who is registered in any state can approve designs and/or tabulated data (Tab Data) for manufactured protective systems.
27. **Saturated soil:** a soil in which the voids are filled with water.
28. **Sheeting:** the members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.
29. **Shield (Shield system):** a structure that is able to withstand the forces imposed on it by a cave-in and thereby protects employees within the structure. Shields used in trenches are usually referred to as trench boxes or trench shields.
30. **Shoring:** a structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.
31. **Short-term exposure:** a period of time less than or equal to 24 hours that an excavation is open.
32. **Sloping (Sloping system):** a method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins.
33. **Soil classification system:** a method of categorizing soil and rock deposits in a hierarchy of Stable Rock, Type A, Type B, or Type C.
34. **Stable rock:** natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed.
35. **Submerged soil:** soil which is underwater or is free seeping.

36. **Support system:** a structure, such as underpinning, bracing, or shoring, which provides support to adjacent structure, underground installation, or the sides of an excavation.
37. **Tabulated data (Tab Data):** tables and charts approved by a registered professional engineer and used to design and construct a protective system.
38. **Trench (Trench excavation):** a narrow excavation made below the surface of the ground. In general, the depth is greater than the width, and the width is not greater than 15 feet.
39. **Uprights:** means the vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not contact each other.
40. **Wales:** means horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or earth.

## D. GENERAL RESPONSIBILITIES AND TRAINING

1. **Employer.** The employer is responsible to:
  - a. Develop the Excavation Safety Policy and Procedures and work with Supervisors and employees to ensure implementation;
  - b. Review Excavation Safety Policy and Procedures periodically to ensure that it continues to provide protection to employees;
  - c. Ensure that all employees involved in this program receive training; competent persons are to receive additional training;
  - d. Document training; and
  - e. Designate a Competent Person for each excavation.
2. **Employees.** Employees are responsible to:
  - a. Follow all parts of this policy;
  - b. Wear required personal protective equipment (PPE) and maintain PPE as described in the Safety Manual, Chapter 13, *Personal Protective Equipment*;
  - c. Take responsibility for their own safety and for the safety of other crew members;
  - d. Take an active part in Excavation Safety training and request additional information if they have questions or do not understand the training; and
  - e. Report any unsafe conditions to their Supervisor.
3. Failure to follow this policy may result in disciplinary action.

## E. SPECIFIC EXCAVATION REQUIREMENTS

1. **IN CASE OF EMERGENCY—DIAL 9-1-1.** Provide the dispatcher with the following information:
  - a. What is the location of the emergency?
  - b. What is the nature of the emergency? (excavation, confined space, entrapment, other)
  - c. How many people are involved?
  - d. Are there other special hazards to be considered? (Electrical hazard, hazardous atmosphere, potential engulfment, etc.)
2. Underground Installations.
  - a. The estimated location of utility installations will be determined prior to opening an excavation. This will be accomplished by contacting the ONE CALL Utility Notification Center either by phone (8-1-1) or by internet and requesting a locate of the excavation site. Outline area to be excavated with white paint.

- b. When excavation operations approach the estimated location of underground installations, caution will be exercised so as not to damage the installations.
  - c. While the excavation is open, underground installations will be protected, supported or removed as necessary to safeguard employees.
3. Competent Person. Prior to opening an excavation, the Supervisor will designate a Competent Person. The lead worker and/or Utility Worker 3 will be designated Competent Person unless otherwise designated.
- a. The Competent Person must:
    - i. have completed competent person training and possess a valid training card;
    - ii. have authority to take prompt measures to eliminate hazards; and
    - iii. conduct inspections of the excavation site at least daily; and
    - iv. remain at the excavation site whenever work activities are taking place.
  - b. The Competent Person will inspect the excavation, the adjacent areas, and the protective system
    - i. prior to the start of work;
    - ii. at least daily; and
    - iii. as needed to address additional hazards, such as rainstorms.
  - c. The Competent Person will document inspections using the Daily Excavation/Trench Inspection Checklist ([Appendix 48](#)). These inspections are required each day that employee exposure is reasonably anticipated.
  - d. When the Competent Person finds evidence of potential cave-in, potential failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall exit the hazardous area immediately until necessary precautions have been taken to ensure their safety.
  - e. The Competent Person will have the authority to assess the excavation project. If he/she has questions about how to perform the work safely, he/she should discuss options with fellow employees on site who have completed competent person training. If questions remain, he/she should contact his/her supervisor.
  - f. If the excavation is complex and poses challenges to the use of available protective systems, the Competent Person will seek input from other competent persons and the supervisor as necessary to resolve the problem safely.
4. Soil Classification.
- a. To the extent possible, the soil classification will be determined prior to opening an excavation following acceptable visual and manual tests outlined in OAR 437-003 (P) [Appendix 48](#).
  - b. During excavation, each soil and rock deposit encountered will be classified by the Competent Person following acceptable visual and manual tests outlined in 437-003 (P) [Appendix 48](#).
  - c. Each soil and rock deposit will be classified by a Competent Person as Stable Rock, Type A, Type B, or Type C (where Stable Rock is the most stable and Type C soil is the least stable.) in accordance with the definitions outlined in OAR 437-003 (P) [Appendix 48](#).
  - d. **In lieu of visual and manual tests, the Competent Person may designate the soil deposit as Type “C” or “C-60”, which includes soft, granular and generally unstable soils.**
5. Access and Egress. A stairway, ramp, ladder or other safe means of access and egress (exit) will be located in trench excavations that are 4 feet or more in depth and will be located so as to require no more than 25 feet of lateral travel for employees.



- a. Structural ramps will be designed by a Competent Person and will be sloped to allow easy access and egress.
- b. Ladders will be long enough to extend 3 feet above the trench.
6. Exposure to Vehicular Traffic. Employees exposed to public vehicular traffic will wear warning vests or other highly visible garments. Vests must be rated ANSI Type 2 or greater.
7. Exposure to Falling Loads and/or Equipment.
  - a. No employee will be permitted underneath loads handled by lifting or digging equipment.
  - b. Employees will stay in the clear of mechanical hole digging equipment or revolving augers.
  - c. Hard hats must be worn whenever employees are exposed to hazards of falling or flying objects, electrical shock or burn.
  - d. Hard hats must be worn when working in a construction area where a backhoe, loader, excavator, or other construction equipment is operating.
  - e. Hard hats must be worn whenever an employee enters an excavation.
8. Warning Systems for Mobile Equipment. When mobile equipment is operated adjacent to an excavation or when equipment is required to approach the edge of an excavation and the operator does not have a clear and direct view of the edge of the excavation, a warning system will be utilized, such as barricades, hand or mechanical signals, or stop logs.
9. Hazardous Atmospheres.
  - a. When oxygen deficiency or a hazardous atmosphere exists or could reasonably be expected to exist, the atmosphere in the excavation will be tested.
  - b. If a hazardous atmosphere is found to exist, employees are instructed to follow Confined Space Procedures, which are covered in Chapter 9 of this Safety Manual.
10. Protection from Hazards Associated with Water Accumulation.
  - a. Employees will not work in excavations in which there is accumulated water or in which water is accumulating unless adequate precautions have been taken to protect employees against the hazards posed by the water. The precautions necessary to protect employees adequately vary with each situation, but could include special support systems, water removal, or use of a safety harness and lifeline.
  - b. The Competent Person is responsible for monitoring water removal and water removal systems and for inspecting the excavation to ensure that adequate precautions have been taken to protect employees.
11. Stability of Adjacent Structures.
  - a. Where the stability of adjoining buildings, walls, sidewalks, pavements or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning will be provided to ensure the stability of such structures for the protection of employees.
  - b. Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees will not be permitted except when:
    - i. A support system is provided to ensure the safety of employees and the stability of the structure; or
    - ii. The excavation is in stable rock; or
    - iii. A registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees.
12. Protection from Hazards Associated with Falls and Obstructions.

- a. Walkways will be provided where employees or equipment are required or permitted to cross over excavations. Guardrails will be provided where walkways are 6 feet or more above lower levels.
- b. Physical barriers will be provided at all remotely located excavations.
- c. All holes, trenches, or excavations left open will be guarded or covered in a manner that protects the public and employees. Proper warning devices will be used.
- d. Whenever possible, walkways, driveways and sidewalks will be kept clear of excavated material or other obstructions.

13. Protection of Employees Associated with Loose Rock or Soil.

- a. Excavated materials (spoils) and other materials and equipment will be placed at least 2 feet from the edge of the excavation.
- b. Barriers or other efficient retaining devices may be used to prevent excavation materials from falling into the excavation.

**F. PROTECTIVE SYSTEMS**

- 1. Each employee in an excavation that is 5 feet in depth or greater will be protected by an adequate protective system. Excavations that are less than 5 feet in depth will be examined by the Competent Person who will determine if a protective system is required.
- 2. Each employee in an excavation will be protected from cave-ins by an adequate protective system except when:
  - a. Excavations are made entirely in stable rock; or
  - b. Excavations are less than 5 feet in depth and examination of the ground by the Competent Person provides no indication of a potential cave-in.
- 3. Sloping and benching systems may be used as methods of protecting employees working in excavations.
  - a. Configurations for sloping and benching systems will be in accordance with OAR 437-003 (P), Appendix 49. Sloping and benching systems not utilizing OAR 437-003 (P), Appendix 49 will be designed by a registered professional engineer.
  - b. The maximum allowable slope is the steepest incline of an excavation face that is acceptable for the most favorable site conditions as protection against cave-ins; it is expressed as the ratio of horizontal distance to vertical rise H:V).
  - c. In general, maximum allowable slopes will be as follows:

Soil/Rock Type	Maximum Allowable Spaces (H:V)
<b>Type A</b>	¾ : 1 (53o)
<b>Type B</b>	1 : 1 (45o)
<b>Type C</b>	1 ½ : 1 (43o)

- d. Employees will not be permitted to work on the faces of sloped or benched excavations at levels above other employees unless the employees at the lower level are protected.
- 4. Trench shields or aluminum hydraulic shoring may be used as methods of protecting employees working in excavations.

- a. Support systems including trench shields and aluminum hydraulic shoring will be used in accordance with all specifications, recommendations, and limitations issued or made by the manufacturer.
  - b. The manufacturer's specifications are included in the tabulated data (Tab Data) for the specific support system.
  - c. A copy of the Tab Data will be maintained at the jobsite whenever the protective system is used.
  - d. Sheeting will be used with aluminum hydraulic shoring to prevent local raveling or sloughing of the trench face.
  - e. Sheeting will be one of the following or an approved equal:
    - i. Speed Shore's aluminum sheeting;
    - ii. 0.5-inch or thicker steel plate;
    - iii. 0.75-inch (3/4-inch) Finn Form or another approved plywood (See Tab Data).
  - f. When sheeting is used, it will extend to the top of the excavation and to within 2 feet of the bottom of the excavation. If there is an indication of the possible loss of soil from behind or below the support system, sheeting must extend to the bottom of the excavation.
5. Timber shoring may be used as a method of protecting employees working in an excavation.
- a. Configurations for timber shoring systems will be in accordance with OAR 437-003 (P), [Appendix 50](#).
  - b. Timber shoring support systems will be approved by a registered professional engineer.
  - c. Designs for a timber shoring support system will include a plan indicating size, types, and configurations of the materials used and the stamp of the registered professional engineer.
  - d. At least one copy of the design will be maintained at the jobsite whenever this shoring system is used.
6. Materials and Equipment.
- a. Materials and equipment used for protective systems will be free from damage or defects that might impair their proper function.
  - b. Materials and equipment will be used and maintained in a manner consistent with the recommendations of the manufacturer.
  - c. A Competent Person will examine all materials and equipment before each excavation to evaluate its suitability for use.
7. Installation and removal of a support system will be closely coordinated with the excavation of trenches.
- a. Members of support systems will be securely connected together to prevent sliding, falling, kickouts or other predictable failure.
  - b. Support systems will be installed and removed in a manner that protects employees.
  - c. Support systems will not be subjected to loads exceeding those to which they were designed to withstand.

## G. DAILY EXCAVATION/TRENCH INSPECTION CHECKLIST

1. The Daily Excavation/Trench Inspection Checklist is included as [Appendix 48](#).
2. To determine if you must complete the Daily Excavation/Trench Inspection Checklist, answer the following questions:

- a. Is the excavation more than 2 feet in depth?
  - i. If you answer YES, proceed to the next question.
  - ii. If you answer NO, you do not need to complete the checklist at this time. However, if conditions change and the excavation becomes deeper than 2 feet, you must STOP and re-evaluate the need for the checklist.
- b. If the excavation is less than 4 feet in depth but more than 2 feet in depth, will any employees be required to enter the trench at any time?
  - i. If you answer YES, you must complete the Daily Excavation/Trench Inspection Checklist.
  - ii. If you answer NO, you do not need to complete the checklist at this time. However, if at any time conditions change and employee(s) must enter the trench, you must STOP and complete the Daily Excavation/Trench Inspection Checklist.
- c. If the excavation is 4 feet in depth or greater, complete the Daily Excavation/Trench Inspection Checklist.

## CHAPTER 22: WORKPLACE VIOLENCE PROGRAM

### A. PURPOSE

Violence in the workplace has emerged as a significant occupational safety and health issue. Not only does violence in the workplace cause direct harm to employees of an organization, it also affects co-workers and families and causes worker stress, burnout, lower productivity, and increased health care costs. Nothing is more important to the City of Pendleton than the safety and security of its employees; therefore, the purpose of this chapter is to set policies and procedures that will help maintain safe and healthful working conditions.

### B. POLICY

Threats, threatening behavior, or acts of violence against employees, visitors, guests or other individuals by anyone on City property or work sites will not be tolerated.

### C. APPLICABLE LEGAL STANDARDS

1. Federal OSHA 29 CFR 1926.5(a)(1), General Duty Clause
2. Oregon OSHA, ORS 654.010, General Duty Clause
3. The General Duty Clause states, "Each employer shall furnish to each of his (sic) employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."

### D. DEFINITIONS

1. **Abuse:** the willful infliction of injury, unreasonable confinement, intimidation, or punishment with resulting physical harm, pain or mental anguish, or deprivation by an individual, including a caretaker, of goods or services that are necessary to attain or maintain physical, mental and psychosocial well-being.
2. **Mental Abuse:** includes, but is not limited to, humiliation, harassment, threats of punishment or withholding of treatment of services.
3. **Physical Abuse:** hitting, slapping, pinching, kicking, etc., as well as controlling behavior through corporal punishment.
4. **Sexual Abuse:** includes, but is not limited to, sexual coercion, sexual assault, or sexual harassment.
5. **Verbal Abuse:** any use of oral, written, or gestured language that includes disparaging and derogatory terms to residents or their families, or within their hearing distance, to describe residents, regardless of their age, ability to comprehend, or disability.
6. **Violent Acts:** includes, but is not limited to, angry outbursts, harassment, intimidation, threats, theft, stalking, assault, arson, sabotage, bombing, hostage-taking, kidnapping, extortion, suicide and homicide.
7. **Workplace:** any location, permanent or temporary, where an employee performs work or work-related activities. Workplace facilities include lunchrooms, restrooms, breakrooms, vehicles used for work, and parking facilities.
8. **Workplace Violence:** any violent act committed by an employee or by the public against an employee that occurs in the workplace and creates a hostile work environment that affects employee's physical or psychological well-being.

## E. GENERAL RESPONSIBILITIES

1. **Employer (City).** The employer is responsible to:
  - a. Make every effort to screen out new hires that have a history of violent or criminal acts;
  - b. Provide security measures adequate to safeguard employees and members of the public;
  - c. Provide necessary supervision to ensure that employees perform their duties properly;
  - d. Carry out a proper and thorough investigation upon notification of harassment;
  - e. Intervene in situations of harassment of employees by Supervisors or co-workers whenever the City is aware of the harassment;
  - f. Develop and implement an internal emergency communication and reporting plan;
  - g. Create and implement an employee training program;
  - h. Conduct a risk assessment as necessary at each job site and implement recommendations where feasible; and
  - i. Provide employee assistance counseling within the scope of the City's Employee Assistance Program and provide employees with information about available services.
2. **Employees.** The employee is responsible to:
  - a. Be familiar with and abide by the policies set forth in this Workplace Violence Program;
  - b. Understand the City's zero tolerance policy for violent and unacceptable behavior, including threats, harassment, intimidation, substance abuse, and weapons possession;
  - c. Refrain from provoking, either by actions or words, violent or unacceptable behavior;
  - d. Notify the Supervisor or any higher level authority of violent or unacceptable behavior they have witnessed, received, or been aware of; and
  - e. Notify the Supervisor or any higher level authority if they have been a victim of threats of violence outside the workplace.

## F. INFORMATION

1. There are different types of workplace violence, depending on the relationship between the employee and the person committing the violence. All must be reported, investigated, and acted upon.
  - a. **Stranger on Employee:** Violence is committed by a stranger. There is no known relationship to the employee or workplace. The stranger may enter the workplace to commit a violent act or may act outside the "traditional" workplace while the employee is in the course of his/her job, such as making a delivery or bank deposit.
  - b. **Customer on Employee:** Violence is committed by someone who receives a service, such as a current or former customer, client, patient, or passenger. The violence can be committed in the workplace or outside the workplace but occurs while the employee is performing a job-related function.
  - c. **Partner on Employee:** Violence is committed by someone who has a personal relationship with a worker, such as a current or former spouse or partner, a relative, or a friend. This would include the attacker who has a personal dispute with a worker and enters the workplace to harass, threaten, injure, or kill.
  - d. **Employee on Employee:** Violence is committed in or outside the workplace by a current or former employee, a prospective employee, or a current or former supervisor or manager.

2. Warning signals may alert you to any person who could become violent. However, what is appropriate or inappropriate behavior varies from person to person. Warning signals may include, but not limited to, the following:
  - a. Increased absenteeism;
  - b. Major changes in personal appearance, attitude, or behavior;
  - c. Change in personal relationships;
  - d. Reduction in job efficiency or productivity;
  - e. History of violent, restless, or antisocial behavior;
  - f. Unusual interest in or unexplained pre-occupation with weapons or bringing weapons to work;
  - g. Serious stress in the employee's life;
  - h. Substance abuse;
  - i. Unexplained signals of physical injury, such as bruises or cuts;
  - j. Loitering around the worksite;
  - k. Agitation;
  - l. Inability to make eye contact; or
  - m. Unexplained interest in what you do at work, such as your schedule, procedures for handling money, or security policies.
3. Usually a person does not abruptly become violent; instead, violent behavior gradually escalates over time. Three levels of violence have been identified.
  - a. **Level One** physical and behavioral signs include the following.  
The employee:
    - i. Refuses to cooperate;
    - ii. Spreads rumors;
    - iii. Consistently argues;
    - iv. Is belligerent;
    - v. Constantly swears; and/or
    - vi. Makes unwanted sexual comments.
  - b. **Level Two** physical and behavioral signs include the following.  
The employee:
    - i. Argues increasingly;
    - ii. Refuses to obey;
    - iii. Sabotages;
    - iv. Verbalizes threats or anger;
    - v. Sees self as a victim; and/or
    - vi. Is overly interested in weapons.
  - c. **Level Three** physical and behavioral signs include the following.  
The employee:

- i. Makes suicidal threats;
- ii. Starts physical fights;
- iii. Destroys property;
- iv. Uses a weapons; and/or
- v. Commits assault or arson.

## G. PROCEDURES

1. When the danger of physical harm does not appear to be immediate, such as Level One aggressive behavior, gather all available information and report it to your Supervisor or any higher level authority.
2. If confronted in the workplace, such as with Level One or Level Two aggressive behavior, follow these guidelines:
  - a. Stay calm, listen attentively, and ask the person to sit down.
  - b. Ask the person questions relevant to his or her complaint.
  - c. Acknowledge the person's concerns and try to find solutions.
  - d. Maintain eye contact.
  - e. Speak slowly, softly, and clearly.
  - f. Avoid being defensive.
  - g. Set ground rules/boundaries, such as, "When you shout at me, I can't understand what you are saying."
  - h. Keep the situation in your control.
  - i. If possible, signal a co-worker or Supervisor that you need help. You might use a pre-determined code word or signal or a panic button.
  - j. If a threat is made to another person, alert the threatened person.
3. When it is apparent that one or more individuals may be in immediate physical danger, such as with Level Three aggressive behavior, follow these guidelines:
  - a. Get yourself and others away from the potentially violent person. Evacuate the building if possible. If you cannot evacuate, hide.
  - b. Follow the Emergency Action Plan, Safety Manual, *Chapter 7*.
  - c. **IN CASE OF EMERGENCY—DIAL 9-1-1.**  
Provide the dispatcher with the following information:
    - i. What is the location of the emergency?
    - ii. What is the nature of the emergency? (fire, chemical spill or release, medical emergency, bomb threat, violence, environmental, excavation, confined space, entrapment, etc.)
    - iii. How many people are involved?
    - iv. Are there other special hazards to be considered? (Electrical hazard, hazardous atmosphere, potential engulfment, etc.)
4. Employees who are subject to or become aware of any violent acts or threats of violence will immediately report the matter to the Supervisor or any higher level of authority. (See [Appendix 51](#))
5. Supervisory or management personnel who receive a report of violent activity or a threat of violence will take the matter seriously, assess the situation, and determine the action to be taken.



6. All reports of violent acts or threats of violence will be handled confidentially. Employees who provide information will be protected from retaliation.

## H. TRAINING

1. Training and education ensures that all staff are aware of potential security hazards and the procedures for protecting themselves and their co-workers.
2. Supervisors and managers will be trained in:
  - a. Dealing with employee layoffs, job terminations, and discipline.  
Note: Firings are the cause of most attacks that occur in the workplace.
  - b. Assessing the violence potential of individuals.
  - c. Violence prevention and security and response procedures.
  - d. Conflict resolution methods and the importance of addressing conflict promptly.
3. All employees will be trained in:
  - a. The contents of the Workplace Violence Program.
  - b. How to use the internal emergency communication plan, if applicable.
  - c. Proper reporting procedures.

## CHAPTER 23: FORKLIFT SAFETY

### A. PURPOSE

This Forklift/Industrial Vehicle Safety Policy is designed to help ensure that its employees are protected from unsafe conditions and operations that potentially can occur in the use of forklifts or industrial vehicles. In addition, this program is to ensure compliance with OR-OSHA regulations dealing with the use of industrial vehicles.

Only trained and authorized employees are permitted to drive or operate forklifts or industrial vehicles. All operators are required to follow the procedures in this chapter and manufacturer recommendations on forklift usage and safety. All forklifts and industrial vehicles are to be maintained in safe operating condition.

Forklifts are also commonly referred to as lift trucks.

### B. Applicable Legal Standards

1. Federal: 29 CFR 1910.178 "Powdered Industrial Vehicles"
2. State: OAR 437 – Division 2, Subdivision N

### C. General Responsibilities

1. **Management:** Managers and supervisors are responsible to see that only trained employees are authorized to operate forklifts and industrial vehicles. Management is required to see that adequate maintenance services are provided and used to ensure safe forklift operating conditions.
2. **Supervisor:** The supervisor is responsible to maintain training records and/or copies of licenses, which demonstrate the employee's training. Supervisors will provide employee training and audit operations for compliance with this chapter and OR-OSHA regulations.
3. **Authorized Operators:** Employees who are authorized to operate forklifts or industrial vehicles must follow all safety procedures as outlined in this chapter, by OR-OSHA rules and manufacturer's recommendations. Employees are required to complete daily operating safety checks and ensure all unsafe equipment is taken out of service and repaired prior to use.
4. All forklift operators will immediately report any accidents to the supervisor.

### D. Safety Procedures

#### Authorized Operators

1. Authorized Operators shall be trained and approved by their supervisor or authorized trainer to operate various types of forklifts. The training shall consist of:
  - a. Instruction in proper inspection and safe operating procedures as outlined in this program.
  - b. A hands-on demonstration by an authorized driver, supervisor or competent outside trainer.
  - c. A written examination on the inspection and safe operating procedures.
2. This training will occur upon initial assignment and at least once every three (3) years thereafter. Refresher training in relevant topics will be provided to the operator when:
  - a. The operator has been observed to operate the forklift in an unsafe manner;
  - b. The operator has been involved in an accident or near-miss incident;
  - c. The operator has received an evaluation that reveals that the operator is not operating the forklift safely;

- d. The operator is assigned to drive a different type of forklift; or
  - e. A condition in the workplace changes in a manner that could affect safe operation of the forklift.
3. Only authorized personnel shall operate forklift trucks.

### Inspections and Fueling

1. Before start of shift, a visual inspection must be made to determine that the horn, lights, brakes, tires, gas supply, hydraulic lines, etc. are in safe working condition.
2. Any defects shall be reported immediately to the supervisor and/or maintenance for correction. The forklift will be out of service until proper repairs can be made.
3. The operator shall not operate an unsafe forklift or other industrial vehicles at any time.
4. Operators shall not make any repairs or adjustments on any forklift unless trained and authorized to do so.
5. For electric powered vehicles, battery charging shall be done only in a well-ventilated area. No smoking or open flames are permitted in battery charging areas.

### Determining Load Capacity

1. Operators will not exceed the safe load capacity of a forklift at any time. Double tiered loads shall not be handled unless the vehicle is designed to accommodate the load.
2. The load capacity is shown on the "Forklift Nameplate".
3. The load center is determined by the center of gravity which is listed as the horizontal distance from the front of the face of the forks, or the load face of an attachment, to the center of gravity of the load.
4. The center of gravity of a forklift moves because it has moving parts. The center of gravity moves forward and back as the upright is tilted forward and back. The center of gravity moves up and down as the upright moves up and down. Factors in determining the center of gravity include:
  - a. Size of load
  - b. Weight of the load
  - c. Shape of the load
  - d. Position of the load
  - e. Lift height
  - f. Amount of tilt
  - g. Tire pressure
5. Dynamic forces created when the forklift is moving (acceleration, braking, turning, and operating on uneven surfaces or incline)
6. Operators shall not counterweight a forklift to increase lifting capacity, rather the load shall be broken down or a forklift with a higher rating shall be used.

### General Operating Safety Rules

1. The operator must be in control of the forklift steering at all times.
2. No person shall ride as a passenger on a forklift or forks or on the load being carried.
3. A forklift will not be used to elevate a platform or pallet with persons on it, except work platforms specifically designed for this purpose. Work platforms must have standard guardrails, and must be securely fastened to the forks. In addition:

- a. The hydraulic system shall be so designed that the lift mechanism will not drop faster than 135 feet per minute in the event of a failure in any part of the system.
  - b. An operator shall stay in attendance at the forklift while workers are on the platform.
  - c. The operator shall be in the normal operating position while raising or lowering the platform.
  - d. The vehicle shall not travel from point to point with the work platform elevated at a height greater than 4 feet while workers are on the platform. When necessary at heights greater than 4 feet, inching may be permitted provided it is done at a very slow speed.
  - e. The area between workers on the platform and the mast shall be guarded to prevent contact with chains or other shear points.
4. Operators shall not put their fingers, arms, or legs between the uprights of the mast, or beyond the contour of the forklift.
  5. Operators shall look in the direction of travel.
  6. When a forklift is not carrying a load the operator shall travel with the forks low.
  7. Operators must avoid making jerky starts, quick turns, or sudden stops and travel slowly when turning. Forklifts can tip over even at very slow speeds. The combination of speed and sharpness of a turn can cause a tip-over. A forklift is less stable when the forks are elevated, with or without a load. In fact, the forklift will actually tip over more easily when empty than when loaded with the load lowered.
  8. If the forklift tips over:
    - a. DO NOT JUMP OFF!
    - b. HOLD FIRMLY TO THE STEERING WHEEL; BRACE YOUR FEET AND LEAN FORWARD AND AWAY FROM THE POINT OF IMPACT.
  9. The operator will not use reverse as a brake.
  10. Forklifts shall be driven on the right side of the aisleway/roadway.
  11. Operators shall cross railroad tracks diagonally whenever possible.
  12. All vehicles shall be operated at a safe speed with due regard for traffic and conditions. Maximum allowed speeds:
    - a. Inside buildings - 5 mph
    - b. Outside buildings and not in work areas - 7 mph
    - c. On roads outside - 10 mph
  13. Operators shall slow down on wet and slippery surfaces.
  14. Operators shall slow down at cross walks and locations where vision is obstructed.
  15. Operators entering a building or nearing a blind corner shall make their approach at reduced speed, sound horn, and proceed carefully. (Exception: blind corners equipped with mirrors providing a full view in all directions.)
  16. Operators shall give pedestrians the right-of-way at all times.
  17. Operators shall not drive toward any person who is in front of a fixed object or wall.
  18. Operators shall not overtake and pass another forklift traveling in the same direction at intersections, blind spots, or hazardous locations.
  19. No person shall stand or walk under elevated forks or any load.
  20. The load shall be carried as low as possible (consistent with safe operations, 2 to 6 inches above the surface).
  21. Forks shall be placed under the load as far as possible.

22. Generally, do not lift a load with one fork.
23. No load shall be moved unless it is safe and secure. To maintain balance, the load should be centered and the forks properly spaced to be near the outside edges. Before traveling, the load shall be tilted back until it rests securely. A load backrest shall be used to prevent spilling of the load.
24. Position each fork the same distance from the center of the carriage. Set forks as far apart as possible for maximum support of the load. Center the weight of the load between the forks. Otherwise, the load may fall off the forks when you turn a corner or hit a bump.
25. The operator's view should not be obstructed by the load. In the event of a high and or wide load the forklift will be driven backward in low gear.
26. Operators need to watch overhead clearance.
27. On a downgrade, the load shall be last.
28. On an upgrade, the load shall be first.
29. The brakes of forklifts shall be set and wheel chocks placed under the rear wheels to prevent movement during loading and unloading. Bridge plates shall be properly in place and secured.
30. Wheel stops or other recognized positive protection shall be provided to prevent railroad cars from moving during loading or unloading operations. Bridge plates shall be properly in place and secured. Positive protection shall be provided to prevent railroad cars from being moved while dockboards or bridge plates are in position.
31. Forklift drivers will come to a complete stop before reversing direction of travel.
32. Unstable loads shall be restacked or banded.
33. Use extra care when handling long lengths of pipe, or other materials.
34. Avoid sharp or fast end-swing. Forklifts are designed to work in relatively small spaces. Because of this they can turn sharper than some other vehicles. When the forklift is steered by the rear wheels the rear of the forklift moves to the side during a turn. This movement is called "tail swing". An operator must be aware of the tail swing and always check to make sure the tail swing area is clear before turning. Failure to observe the tail swing area when making a turn can injure or kill someone.
35. Hazardous materials will not be moved unless they are in approved containers.
36. Compressed gas cylinders shall be moved only in special pallets designed for this purpose.
37. The flooring of trucks, trailers, and railroad cars shall be checked for breaks and weaknesses prior to loading or unloading. Forklifts or powered industrial trucks shall not be driven onto flooring that is found to be of inadequate strength.
38. Operators shall never attempt to turn sideways on an incline. Do not run on an incline to reduce the possibility of a tip-over.
39. All forklifts shall be equipped with audible warning signals and where practical shall have spark arrestors.
40. All forklifts operated at night in dark buildings or in poorly lighted areas shall be equipped with head and taillights.
41. All forklifts operated in areas where overhead hazards exist shall be equipped with an approved overhead guard.
42. Flywheels, gears, sprockets, chains, shear points and other exposed parts constituting a hazard to the operator or other employees shall be guarded.
43. Forklifts powered by internal combustion engines shall not operate in buildings for extended periods unless the buildings are adequately ventilated.

44. Forklifts must be safely parked when not in use. The controls shall be neutralized, power shut off, brakes set, and the forks left in a down position flat on the surface, and not obstructing walkways or aisles. These procedures must be used whenever the operator leaves the forklift unattended (i.e. when the driver is 25 feet or more away or the vehicle is out of the operator's view).
45. A forklift shall not be left on an incline unless it is safely parked and the wheels blocked.
  - a. No forklift shall be parked within 10 feet of a railroad track.
  - b. Forklifts shall not be parked or left unattended in aisles, by exits or doors.

## **E. LPG Tank Filling Procedure**

1. OR-OSHA Requirements:
  - a. OAR 437-125-230(3) Industrial trucks (including lift trucks) equipped with permanently mounted fuel containers shall be charged outdoors.
  - b. OAR 437-125-430(7) The dispensing of LP gas into the fuel container of a vehicle shall be performed by a competent attendant who shall remain at the LP gas dispenser during the entire transfer operation.
  - c. OAR 437-125-230(5) Engines on vehicles shall be turned off while fueling if the fueling operation involves venting to the atmosphere.
  - d. OAR 437-125-435 There shall be no smoking on the driveway of the fueling area, in the dispensing areas or transport truck unloading areas.
  - e. Signs prohibiting smoking shall be posted within sight of the person refueling. Letters on such signs shall be not less than 4 inches high. The motors of all vehicles being fueled shall be shut off during the fueling operations.
2. Basic rules: Industrial Truck Use of LPG
  - a. When filling forklift tanks, the employee must wear eye, face and hand protection.
  - b. No more than two LP gas containers shall be used on a forklift for motor fuel purposes.
  - c. Forklifts shall not be parked and left unattended in areas of possible excessive heat or sources of ignition.
  - d. All sources of ignition should be eliminated to the extent possible. Conspicuous signs must be posted in the storage area forbidding smoking.
  - e. For outside tank areas, all readily ignitable materials such as weeds and long dry grass shall be removed within 10 feet of any container.
3. Container valves and container accessories
  - a. Valves, fittings, and accessories connected directly to the container including primary shutoff valves, shall have rated working pressure of at least 250 p.s.i.g. and shall be of material and design suitable for LP gas service. Cast iron shall not be used.
  - b. Shutoff valves shall be located as close to the container as practicable.

# CHAPTER 24: FALL PROTECTION PLAN

## A. PURPOSE

The purpose of this policy is to establish a Fall Protection Plan that will

- Provide a workplace that is safe for employees;
- Avoid occupational injuries;
- Comply with OR-OSHA requirements; and
- Reduce worker's compensation claims.

## B. APPLICABLE LEGAL STANDARD

The following standards apply to the Fall Protection Plan:

1. Federal OSHA 29 CFR 1926.500-503
2. State OR-OSHA Division 2 Subdivision D & Division 3 Subdivision M
3. 437-002-0134(5)(a) *All employees must be protected from fall hazards when working on unguarded surfaces more than 10 feet above a lower level or at any height above dangerous equipment.*

## C. DEFINITIONS

1. **Anchorage:** A secure point of attachment for lifelines, lanyards or deceleration devices.
2. **Arresting Force:** The force generated by arresting the test weight that is transmitted through the fall arresting system components to the anchorage or load cell.
3. **Body Belt (Safety Belt):** A strap that both secures around the waist and attaches to a lanyard, lifeline or deceleration device.
4. **Body Harness:** Straps that are secured about an employee in a manner that distributes the arresting forces over at least the thighs, shoulders and pelvis, with provisions for attaching a lanyard, lifeline or deceleration device.
5. **Buckle:** Any device for holding the body belt, chest harness and body harness closed around the employee's body.
6. **Chest Harness:** Straps secured only around the chest with shoulder straps to assure proper chest strap positioning.
7. **Classification According to Use:** Safety belts, harnesses and lanyards are classified according to their intended use as:
  - a. **Type I:** A personal fall arrest/restraint system that is used to arrest a wearer's fall from a work level. It consists of an anchorage(s), hardware, body belt or body harness, a lanyard or deceleration device and may include a lifeline, or a device that subsequently allows the employee to be lowered to the ground or lower work level.
  - b. **Type II:** A personal fall restraint system that is used to keep a wearer at the work level or limit any free fall to a maximum of two feet from the work level. This system consists of a body belt, a chest or body harness and anchor, as applicable.
8. **Competent Person:** One who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous or dangerous to employees, and who has the authority to take prompt corrective measures to eliminate such hazards.
9. **Construction Activities:** Work for construction, alteration or repair, including painting and decorating.

10. **Drop Line:** A vertical line from a fixed anchorage, independent of the work surface, to which the lanyard is affixed.
11. **Fall Protection System:** personal fall arrest system, fall restraint system, positioning device system, guardrail system, safety net system, warning line system, or slide guard system.
12. **Fixed Anchorage:** A secure point of attachment, not \_\_\_\_\_ Chapter of the work surface, for drop lines, lifelines or lanyards. The fixed anchorage must be capable of supporting a minimum deadweight of 5,400 pounds per person.
13. **Hardware:** Buckles, D-rings, snap-hooks and associated hardware used to attach the components of the system together.
14. **Lanyard:** A flexible line used to secure a body belt or body harness to a lifeline or directly to a point of anchorage.
15. **Lifeline:** A horizontal line between two fixed anchorage, independent of the work surface to which the lanyard is secured either by tying off or by means of a suitable sliding connection. The lifeline must be capable of supporting a minimum deadweight of 5,400 pounds per person applied at the center of the lifeline.
16. **Positioning Belt:** Simple or compound straps that may be secured about the body to hold the wearer in the work position.
17. **Positioning Device System:** A body belt or body harness system rigged to support employees on elevated vertical surfaces, such as a wall or windowsill, allowing them to work with both hands free.
18. **Qualified Person:** One who by possession of a recognized degree, certificate or professional standing, or by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work or the project.
19. **Quick Release Buckle:** A multiple component buckle that can be released with one positive action and whose releasing mechanism is positively locked in normal use.
20. **Retracting Line:** An automatic tensioning system that pays out and retracts line at a certain speed and locks or brakes when the speed is exceeded.
21. **Rope Grab:** A device that attaches to a lifeline as an anchoring point to provide a means for arresting a fall.
22. **Snap Hook:** A self-closing device with a keeper, latch or other similar arrangement that will remain closed until manually opened. This includes self-closing, single action, double action, double locking snap hooks.
23. **Strength Factor:** The ratio of the minimum strength of a personal fall arrest/restraint system to the arresting force generated by a 250 pound person free-falling the length of the lanyard.
24. **Suspension Belts:** A design of simple or compound straps that may be secured about the wearer's body as an independent work support. These are commonly referred to as saddle belts, boatswain's chairs or tree trimmers' belts.
25. **Tie Off:** When a user wearing personal fall protection equipment connects directly or indirectly to an anchorage. The term also means the condition of an employee being connected to an anchorage.
26. **Total Fall Distance:** The maximum vertical distance between a wearer's body belt or body harness attachment points before and after the fall is arrested, including lanyard extension and/or deceleration distance.

## D. GENERAL

1. All places of employment, passageways, storerooms, and service rooms will be kept clean and orderly and in a sanitary condition. Floors will be maintained in a clean and, so far as possible, dry condition. Floors will be kept free from protruding nails, splinters, holes, or loose boards.



2. Covers and/or guardrails shall be provided to protect personnel from the hazards of open pits, tanks, vats, ditches, manholes, etc.
3. Except as otherwise provided in this chapter, when employees are exposed to a hazard of falling 10 feet or more to a lower level, the employer shall ensure that fall protection systems are provided, installed, and implemented.
4. OR-OSHA permits roof work up to 10 feet above a lower level without guardrails, safety nets or arrest systems if employees are constructing leading edges, setting walls and trusses, or doing roofing and sheathing work.
5. All employees will be protected from falling into or onto dangerous equipment by fall protection systems, safety net systems, guardrail systems, or equipment guards.
6. Fall protection needs will be evaluated by the Supervisor or Qualified Competent Person. When fall protection is needed based on the construction site needs or general maintenance or repair work task, it is his/her responsibility to implement the system and train all affected employees.
7. Exception from the use of conventional fall protection equipment is only available when our employees are engaged in activities that are of limited duration and limited exposure and where it can be demonstrated that it is not feasible or it creates a greater hazard to use conventional fall protection equipment. Under these circumstances, the employee will not access the unguarded area unless an alternate protection is used to prevent exposure to a fall hazard.

## **E. FLOOR AND WALL OPENINGS AND HOLES**

1. Employees will be protected from falling through holes more than 6 feet above lower levels by personal fall protection systems, safety net systems, guardrails, or covers erected around such holes.
2. A floor opening cover is required whenever an opening measures 12 inches or more in its least dimension through which a person may fall. Whenever the cover is not in place, the opening must be constantly attended by a person or guarded by temporary guardrails or other physical barricades.
3. Employees will be protected from wall openings where the wall opening is 4 feet or more above lower levels by personal fall protection systems, safety net systems, or guardrails.
4. Employees will be protected from window wall openings where the bottom of the window opening is less than 3 feet above the landing or platform and the drop to the lower level is more than 4 feet.
5. Employees will be protected from falling from platforms where the platform is 4 feet or more above lower levels. A platform is defined as any elevated surfaces designed or used primarily as walking or working surfaces and any other elevated surfaces where employees walk or work on a predictable and regular basis.
6. Employees will be protected from falling objects from higher levels by one or more of the following measures:
  - a. Wearing hard hats;
  - b. Erecting toeboards, screens, or guardrail systems to prevent objects from falling from higher levels; or
  - c. Erecting canopies or barricades to prevent objects from falling from higher levels.
7. Employees at the edge of an excavation 6 feet or more in depth shall be protected from falling by guardrail systems fences or barricades when the excavations are not readily seen because of plant growth or other visual barriers.

## **F. LADDERS**

1. Employees shall not ascend a fixed ladder more than 24 feet long unless a properly designed cage is installed or a ladder-climbing device is available.

2. A ladder cage is required on all fixed ladders more than 24 feet to a maximum unbroken length of 30 feet.
3. A ladder-climbing device may be substituted for ladder cages in certain circumstances and usually consists of a safety belt, lanyard, friction brake, and sliding attachment.

## G. FALL PROTECTION SYSTEMS

### 1. Guardrail Systems

- a. A **standard guard railing** consists of a top rail, midrail and posts which can support an impact of 200 pounds in any direction. Guard railing is required on all open-sided floors, ramps, balconies, walkways and platforms elevated 4 to 6 feet or more above the floor, ground or other working surface. The top rail must be installed at 42 inches, plus or minus three inches, from floor level. Midrails, when used, shall be installed at a height midway between the top edge of the guardrail system and the walking/working level. The midrail and toe board may be omitted where materials are regularly passed over the edge or where the railing is set back 12 inches or more from the leading edge.
- b. If **wire rope** is used for top rails, it must be marked at six-foot intervals or less with high visibility material.
- c. A **standard railing** is a barrier erected along exposed edges of a floor opening, wall opening, ramp, platform, or runway to prevent people from falling. A standard railing consists of a top rail, intermediate rail, and posts and has a vertical height of 42 inches nominal from the upper surface of the top rail to the floor, platform, runway or ramp level.
- d. A **standard stair railing** is a vertical barrier erected along exposed sides of a stairway to prevent people from falling. A stair railing will be required on the open sides of all exposed stairways with four or more risers and on at least one side of closed stairways, preferably on the right side descending. The handrail will be at least 2 inches in diameter when of hardwood and at least 1½ inch diameter when of metal pipe. All handrails and railings will be provided with a clearance of not less than 3 inches between the handrail or railing and any other object. The height of handrails must be 30 to 34 inches from the upper surface of handrail to surface of the tread.
- e. A **standard toe board**, which is at least 4 inches in vertical height and is installed no more than 1/4 inch above floor level at the perimeter of the open-sided working/walking surface, will be required whenever persons pass below and there is a potential for being struck by falling objects.

2. **Safety Net Systems** are arrest systems consisting of mesh nets, including panels, connectors and other impact absorbing components. If safety nets are needed, our competent person will oversee the installation and performance requirements of the system. OR-OSHA has specific requirements for the performance of safety nets. (1926.502 (c))
3. When it is not feasible to use physical barriers to protect employees from falls, **personal protective equipment (PPE)**, such as fall protection systems, shall be used. PPE shall be chosen based on:
  - a. Distance of potential fall;
  - b. Impact and fall arresting forces on the body from the PPE during a sudden stop; and
  - c. Intended use of PPE.
4. A **Personal Fall Arrest System** (Type I) has a safety harness and lanyard fall arrest system where the harness is worn on the body and attached to a lanyard and lifeline or structure. The lanyard consists of a rope suitable for supporting one person. One end is fastened to a safety harness and the other end is secured to a substantial object or a safety line.
  - a. Training and proper fitting will be conducted prior to use.

- b. All components of the fall protection system shall meet the strength requirements of the American National Standard A 10.14-1991. These requirements are based on one worker use. If multiple workers are tied off to a single lifeline, the strength requirement must be increased by the number of workers affected.
  - c. When tied off while working on suspended scaffolding, each worker must use a separate line which is not connected to the scaffold.
  - d. Permanent lifelines must be a minimum one-half inch steel cable capable of supporting 5,000 pounds per person at the center of the line.
  - e. Hardware for body belts/harnesses and lanyards must be drop forged, corrosion resistant, with smooth edges, without cracks or breaks, and with a minimum of 5,000 pounds breaking strength.
  - f. Knots shall not be used in components of a fall protection system.
  - g. Lanyards shall be kept as short as possible. In no case shall they exceed six feet to minimize the possibility and length of a free fall.
  - h. Lanyards must completely stop a free-fall and limit deceleration distance to 3.5 feet.
  - i. Wire rope or rope-covered wire lanyards shall not be used where impact loads are anticipated or where there is an electrical hazard.
  - j. Rope lanyards shall not be stored in work pouches where they may be subject to deterioration.
  - k. Where there is exposure to abrasion, spun nylon rather than filament nylon shall be used.
  - l. Only safety belts/harnesses with locking snaps shall be used to prevent "rollout" or disengagement. All hardware shall be compatible with the locking snap.
  - m. Only shock-absorbing lanyards shall be used to reduce the fall arresting impact on the wearer.
  - n. Tongue-type buckles will be used in lieu of friction buckles since the latter may lose the ability to stop detachment if contaminated with grease or oil.
5. **Personal retrieval systems** (Type II chest harnesses) designed for confined space entry are to be worn for rescue purposes only and in no case should be used to stop a vertical fall. These systems are covered in this Safety Manual, Chapter 9 *Confined Space Entry Plan*.
6. **Inspection of Fall Arrest Systems**
- a. The user shall inspect the fall protection prior to each use.
  - b. A trained and qualified competent person shall inspect all components of each fall protection system at least once every 6 months. The dates of this biannual inspection will be recorded on a tag attached to the equipment.
  - c. Every five years the fall protection system shall be returned to the manufacturer for recertification.
  - d. Any defective body belt/harness, lanyard or lifeline shall be destroyed or returned to the manufacturer for recertification before use.
  - e. Belts and lanyards that have been subjected to impact loading shall be removed from service and destroyed or returned to the manufacturer for recertification before use.
  - f. Belts and lanyards shall be protected against being cut or abraded while in use.
7. **Warning Lines and Safety Monitoring Systems.** These have specific applications for roofing operations on low-slope roofs. Safety monitoring systems also have applications when conventional fall protection cannot be used and when no alternative measures have been implemented. These systems do not provide a physical means of preventing or arresting falls but warn of the leading edge.

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## H. TRAINING

1. Employees required to use fall protection equipment, such as Personal Fall Arrest systems or Personal Retrieval systems, will be trained in the use of the system they will be using. The training will be documented. (A sample Employee Training Certificate is attached as [Appendix 57.](#))
2. Training will include:
  - a. Recognition of fall hazards due to the nature of the work area.
  - b. Fall protection requirements under this chapter and the OR-OSHA fall protection standard.
  - c. Correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection system to be used.
  - d. The use and operation of the fall protection system to be used and proper fitting of the harness.
  - e. The correct procedures for the handling and storage of equipment and materials.

# CHAPTER 25: WELDING – FIRE & EXPOSURE CONTROL

## A. PURPOSE

Welding is a hazardous operation which must be performed in accordance with safety standards and by qualified, trained employees. This Welding policy is designed to:

- Ensure employees are aware of the hazards associated with welding, cutting and brazing;
- Ensure employees are aware of the fire hazards associated with welding, cutting and brazing;
- Provide a workplace that is safe for employees;
- Avoid occupational injuries; and
- Reduce worker's compensation claims.

## B. APPLICABLE LEGAL STANDARD

The following standards apply to the Welding – Fire & Exposure Control plan:

1. OAR 437, Division 2, Subdivision Q, 1910.252 -1910.255, Welding, Cutting & Brazing

## C. DEFINITIONS

1. **Approved** means listed or approved by a nationally recognized testing laboratory.
2. **Welding and welding operator** means any operator of electric or gas welding and cutting equipment.
3. **All other welding terms** used in OSHA standard are in accordance with American Welding Society - Terms & Definitions A3-0.969.

## D. GENERAL

1. For welding, cutting, and grinding on stainless steel or chromed steel, special precautions may be necessary due to potential exposure to hexavalent chromium. Small jobs shall be done in a well-ventilated area. Larger jobs will be contracted out. Refer to OAR 437, Division 2, Subdivision Z, 1910.1026, Hexavalent Chromium, for specific instructions.
2. Employees who are authorized to perform welding must follow all safety procedures as outlined in this chapter, OR-OSHA rules, and manufacturer's recommendations.
3. Employees are required to inspect their equipment daily prior to operation to ensure that the equipment is in good conditions and that all safeguards are on the equipment. Any problems with the equipment are to be reported to the Supervisor immediately.
4. Supervisors are responsible to ensure that all welders and fire watch personnel understand the hazards.
5. **Basic Hazard Awareness.** Safety in the many processes of welding and cutting requires certain precautions and standardized operating procedures. Welding is associated with five principal hazards:
  - a. **Electric Shock** risk depends on the type of welding process. Additional training in Electrical Safety may be required.
  - b. **Burns** must be guarded against when using welding equipment because of the very high temperatures.
  - c. **Fire Hazards** are created by welding, and flying sparks are the source of many industrial fires.
    - i. In areas where flammable gases, vapors, and dusts are present, only a tiny spark is needed to set off a fire or explosion.

- ii. Flying pieces of molten metal can fall through cracks and openings as small as nail holes and ignite combustibles that are beyond the welder's visual range.
  - iii. Hot metal that is being welded or cut can cause fires if allowed to contact flammable or combustible material such as drip pans or oily rags.
  - iv. The torch flame used by the welder is another source of ignition and must be handled carefully.
  - v. Compressed oxygen gas used in welding is a fire hazard because it supports and intensifies the rate of combustion of other materials.
- d. **Radiant Energy** hazards in welding include ultraviolet light, infrared light, and visible light.
- i. Exposure to the welding arc (ultraviolet rays) may result in very painful irritation of the eyes and skin.
  - ii. Infrared rays act upon the eyes simply as heat and can cause a burn or irritation of the tissue affected.
  - iii. The glare of excessive visible radiation can cause headaches, eye fatigue, and loss of visual efficiency.
- e. **Inhalation of Hazardous Fumes** can occur because welding produces airborne exposure to a variety of potentially harmful gases and fumes.
- i. Fumes are generated from both the base metal and the wire or rod used in the process.
  - ii. The hazard level from metal fumes depends on the type of metal. For example, in steel welding, exposures could include iron oxides, chromium, manganese, and nickel.
  - iii. The gases also vary with the type of shield gases used in welding, the type of rods used, and the type of fluxes used.
  - iv. The very high temperature of the welding flame and of the metals involved can cause ignition of materials such as grease, oil, or surface coatings. These materials will also break down under heat to produce hazardous gases and fumes.

## E. PROCEDURES

1. Welding shall be performed by qualified welders only.
2. Fire protection for welding operations includes:
  - a. Fire protection equipment should be kept immediately at hand and ready for use. In critical areas, the fire protection equipment should be staffed by fire watch personnel during and after welding operations.
  - b. Welding operations need to be performed away from flammable materials whenever possible.
  - c. If the object to be welded cannot be moved to a safe location, all movable flammable materials should be moved to a safe location.
  - d. If there is potentially flammable material that cannot be moved, Hot Work Procedures ([Appendix 59](#)) should be followed, and a Hot Work Permit should be issued.
  - e. Flammable materials such as grease and oil and other potentially hazardous materials should be cleaned from surfaces before welding is started.
3. Mixtures of fuel gas and air should not be allowed to accumulate.
4. No welding, cutting or similar work should be undertaken on tanks, barrels, drums, or other containers which have been contaminated with flammables unless the contamination is first removed so that there is no possibility of fire or emission of toxic vapors.

5. Adequate ventilation should be provided as protection against accumulations of toxic fumes and gases. If such precautions cannot be taken, the welder should wear appropriate respiratory protection. (See Chapter 14, *Respiratory Protection Program*)
6. If welding is to be done in enclosed or confined spaces, a specific Permit-Required Confined Space work permit and a Hot Work Permit will be required. (See Chapter 9, *Confined Space Entry Plan*)
7. To protect against inhalation hazards, consideration should be given to the nature of the material being welded. Special consideration is required for fluorine, zinc, lead, cadmium, and preservative coatings.
8. Precautions need to be taken to avoid shock from electric welding operations.
  - a. The welder should not stand in water while doing electric welding.
  - b. Hot electrode holders should not be dipped in water.
  - c. Cables with damaged insulation or exposed conductors must not be used and should be replaced before any such work is attempted. If necessary to join lengths of cable, it must be done using only connectors designed specifically for the purpose.
9. Employees exposed to the hazards created by welding, cutting, or brazing operations must be protected by Personal Protective Equipment (PPE).
  - a. The face, body and hands should be covered to prevent burns from splatter, slag, sparks, or hot metal.
  - b. Flame-proof, heat-insulating gloves should be worn during welding operations. Wet or excessively worn gloves should not be used.
  - c. The eyes and skin should be protected against the glare and radiation from a welding arc or flame.
    - i. Helmets or hand shields should be used during all arc welding or arc cutting operations.
    - ii. Goggles or other suitable eye protection should be used during all gas welding or oxygen cutting operations.
    - iii. Eye protection in the form of suitable goggles should be provided where needed for brazing operations.
    - iv. Helpers and attendants should also be provided with eye protection.
    - v. Other personnel in the vicinity of welding operations should be protected from reflections by suitable shields or barriers.
    - vi. Helmets and shields should be arranged to protect the face, neck and ears from direct radiant energy from the arc.

## F. GAS CYLINDERS

1. Gas cylinders must be handled carefully. Breaking the neck from a full cylinder can turn the bottle into a missile.
2. Gas cylinders should be secured when stored and when being moved to keep them from falling. Cylinder valves should be closed and cylinder caps should be on the cylinder before moving.
3. Gas cylinders should be stored in an upright position.
4. Valve protection caps should always be in place on those cylinders designed for caps, except when the cylinder is in use or being connected or disconnected. Valve protection caps should not be used for lifting cylinders.
5. Gas cylinders should be legibly marked for the purpose of identifying the gas content.
6. Gas cylinders should be stored in a well-protected, well-ventilated, dry location out of the direct rays of the sun and away from other sources of heat.

7. Never strike an arc against a gas cylinder.
8. Do not use a hammer or wrench to open cylinder valves. If valves will not open by hand, notify the supplier. Always open the cylinder valve slowly.
9. Do not tamper with cylinder valves or try to repair them. Send the supplier a prompt report of the trouble, including the cylinder serial number, and follow the supplier's instructions.
10. Always stand to one side when opening the cylinder valve.
11. Empty gas cylinders should be marked and have their valves closed tightly.
12. Gauges should be maintained in good condition. Cracked or missing glass should be replaced prior to use.
13. Backflow or flashback preventers must be installed on all oxygen or flammable gas welding and cutting units between the torch or blowpipe and the hoses.
14. Acetylene cylinders must always be maintained in an upright position.
15. Oxygen cylinders should be handled with special care.
  - a. Oxygen cylinders should be separated from fuel-gas cylinders or other combustible materials by at least 20 feet or by a fire-resistant barrier at least 5 feet high.
  - b. Grease or oil should be kept away from and never used to lubricate oxygen cylinder valves or regulators.
  - c. Do not handle oxygen cylinders with oily hands or oily gloves.
  - d. Oxygen from supply cylinders should be checked to make certain they are not leaking, especially in enclosed spaces where it can cause ignition of materials that are not normally highly flammable.
  - e. Before connecting an oxygen bottle, first open the valve slightly for an instant, then close and attach an oxygen regulator to the valve.

## G. TRAINING

Supervisors are responsible to see that only trained employees are authorized to use welding, cutting or brazing equipment. Employees who perform maintenance welding, cutting, or brazing should be able to demonstrate their understanding of the following:

1. The hazards associated with welding, cutting and brazing;
2. The fire hazards associated with welding, cutting and brazing and how to inspect the area for potential fire hazards;
3. Proper use of fire protection equipment;
4. Personal protective equipment (PPE) requirements;
5. How to inspect the equipment and PPE prior to use;
6. Ventilation Requirements;
7. How to protect against radiant energy;
8. How to protect against electric shock;
9. Proper storage and handling of gas cylinders; and
10. Expertise in using the welding, cutting or brazing equipment.



## CHAPTER 26: ELECTRICAL SAFETY

### A. PURPOSE

The purpose of the Electrical Safety Program is to provide the maximum protection to our employees whenever they must work around any electrical hazards. This program affects all employees but is especially important for the following employee groups:

- Employees involved in maintenance, repair, and servicing equipment; and
- Employees that work around overhead or underground electrical lines.

Whenever working on equipment, employees must also refer to the *Hazardous Energy Control Program—Lockout/Tagout*, Chapter 11 of this Safety Manual.

### B. APPLICABLE LEGAL STANDARDS

1. State: OAR 437 Division 2, Subdivision S (Electrical Safety - 1910.301 – 1910.399) and Subdivision I (Electrical Protective Equipment – 1910.137)
2. State: OAR 437-003-0404; ORS 757.800 & 757.805: High Voltage Overhead Line Safety Act.
3. Federal: 29 CFR 1910.399

### C. DEFINITIONS

1. **Affected Employee:** An employee whose job requires him/her to perform maintenance on items powered by electric energy or that performs work around areas with overhead and/or underground electrical lines.
2. **Authorized Employee:** Only workers and supervisors who have received special training to recognize and understand the particular hazards involved with the tasks to be performed and the type and magnitude of electric hazards and are authorized to implement the procedure.
3. **Competent Person:** A person who is capable of identifying hazards and has authority to promptly correct them.
4. **Electrical Outlets:** Places on an electric circuit where power is supplied to equipment through receptacles, sockets and outlets for attachment plugs.
5. **Receptacles:** Outlets that accept a plug to supply electric power to equipment through a cord or cable.

### D. INSPECTION OF ELECTRICAL EQUIPMENT








All electrical equipment must be inspected to make sure there are no recognized hazards likely to cause serious physical harm or death to employees. Determine the safety of the equipment by using the following list:

1. Has it been approved or listed by a recognized testing laboratory, such as Underwriters Laboratories (UL) or other approving agency?
2. Is it being used for the purpose it is approved or listed as approved?
3. Does it have strong and durable guards providing adequate protection, including parts designed to enclose and protect other equipment?
4. Is it insulated?
5. Does it overheat or produce arcs under conditions of use?
6. Is it classified by:

- a. Type
- b. Size
- c. Voltage
- d. Current Capacity
- e. Specific Use
- f. Other Factors

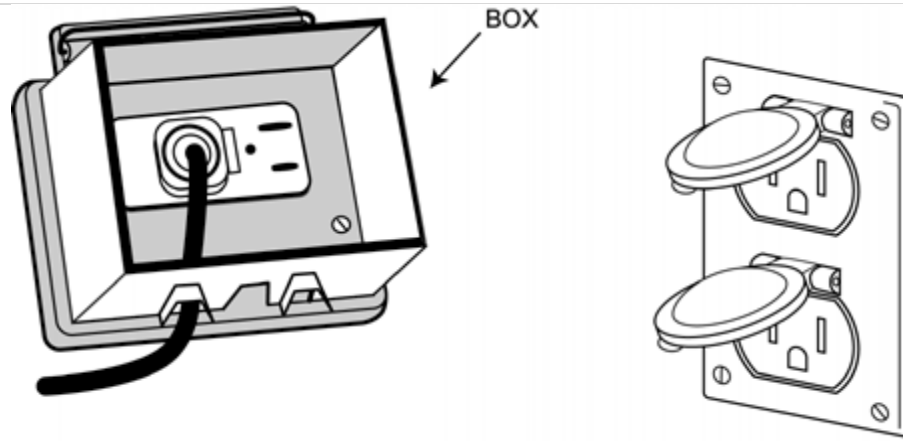
**E. ENSURING ELECTRICAL EQUIPMENT USED FOR APPROVED OR LISTED PURPOSE**

1. Electrical outlets should be rated equal or greater to the electrical load supplied.
2. The proper mating configuration should exist when connecting the attachment plug to the receptacle.
3. Flexible cords and cables are approved and suitable for the way they will be used and the location where they will be used.
4. When electrical outlets, cord connectors and receptacles are joined, they should accept the attachment plug with the same voltage or current rating. (See common electrical outlet configurations below.)

SOME COMMON ELECTRICAL OUTLET (RECEPTACLE) CONFIGURATIONS				
	15 Ampere	20 Ampere	30 Ampere	50 Ampere
Two Pole 3 - Wire Grounding 125 Volt				
Three Pole 3 - Wire 125/250 Volt				
Note: A 20-ampere "T-slot" outlet or cord connector may accept a 15-ampere attachment plug of the same voltage rating.				

**F. ENSURE ELECTRICAL EQUIPMENT USED OR LOCATED IN WET/DAMP LOCATIONS IS DESIGNED FOR SUCH USE**

1. Fixtures and receptacles located in wet or damp locations must be approved for such use. They must be constructed or installed so that water cannot enter or accumulate in wireways, lampholders, or other electrical parts.
2. Cabinets, fittings, boxes, and other enclosures in wet or damp locations should be installed to prevent moisture or water from entering or accumulating inside.
  - a. In wet locations, these enclosures must be weatherproof.
  - b. Switches, circuit breakers, and switchboards located in wet locations must be in weatherproof enclosures.



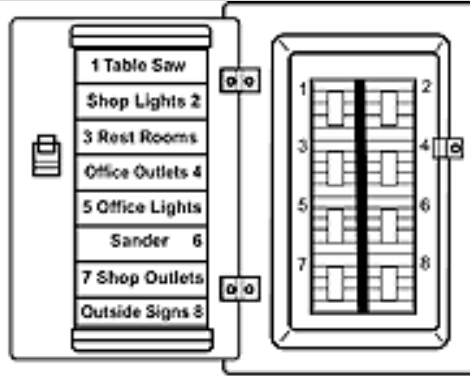
**G. ELECTRICAL EQUIPMENT HAS MANUFACTURER’S MARKINGS**

1. Markings on electrical equipment must be durable and appropriate for the environment.
2. Appropriate markings include:
  - a. The manufacturer’s name OR
  - b. Trademark OR
  - c. The organization responsible for the product AND
  - d. Voltage, current, wattage or other ratings as necessary. (See illustration below.)



**H. IDENTIFY MEANS OF DISCONNECTING**

1. The disconnect means, such as on/off switches and circuit breakers, must be marked to show when it’s open and closed and what equipment it controls unless located and arranged so the purpose is obvious.
2. Each service, feeder and branch circuit should be marked at its disconnecting means or overcurrent device to show when the circuit is open/closed and what circuit it controls unless located and arranged so the purpose is obvious.
3. Markings on the disconnect should be durable and appropriate to the environment that the disconnect is located. (See illustration below.)



**I. MAINTAIN ELECTRICAL FITTINGS, BOXES, CABINETS AND OUTLETS IN GOOD CONDITION**

**1. Openings & Covers**

- a. When conductors enter boxes, cabinets or fittings, the following must be in place:
  - i. The conductor must be protected, i.e. the wires must be protected from abrasions;
  - ii. Openings where conductors enter should be effectively closed so that the internal wiring is not exposed; and
  - iii. Any unused openings should be covered with blanks to ensure that employees are not exposed to the internal wiring.
- b. Provide pull boxes, junction boxes, and fittings with covers approved for the purpose.
- c. In completed installations, each outlet box must have a cover, faceplate, or fixture canopy.
- d. Covers for outlet boxes with openings for flexible cord pendants must have bushings to protect the cord or have a smooth and well-rounded surface where the cord touches the opening.
- e. Metal covers must be grounded.

**2. Areas in front of electrical panels, circuit breaker boxes, and similar equipment which operate at 600 volts or less:**

- a. Must have sufficient working area at least 30 inches wide for operational and maintenance of equipment.
- b. Must be kept clear and free of stored materials so that employees can access this equipment for servicing, adjustments or maintenance.
- c. Should have at least one access route that is free of obstructions.
- d. Must have at least 3 feet (36 inches) of working space in front from floor to ceiling, measured from the exposed live part of the enclosure front. Consider installing signage that states this requirement or hazard tape on the floor to ensure that the 3 feet clearance is maintained at all times.
- e. Should have adequate indoor lighting for clear viewing of the area.
- f. Must have at least 6 feet 3 inches of headroom. Minimum clear distances may be 2 feet 6 inches for equipment built or installed before 3/20/82.
- g. The table below shows the area that must be kept clear depending upon the layout of the electrical equipment.

Conditions*	0-150 Volts to Ground	151-600 Volts to Ground
A	<b>3 ft</b>	<b>3 ft</b>
B	<b>3 ft</b>	<b>3 ½ ft</b>

C

3 ft

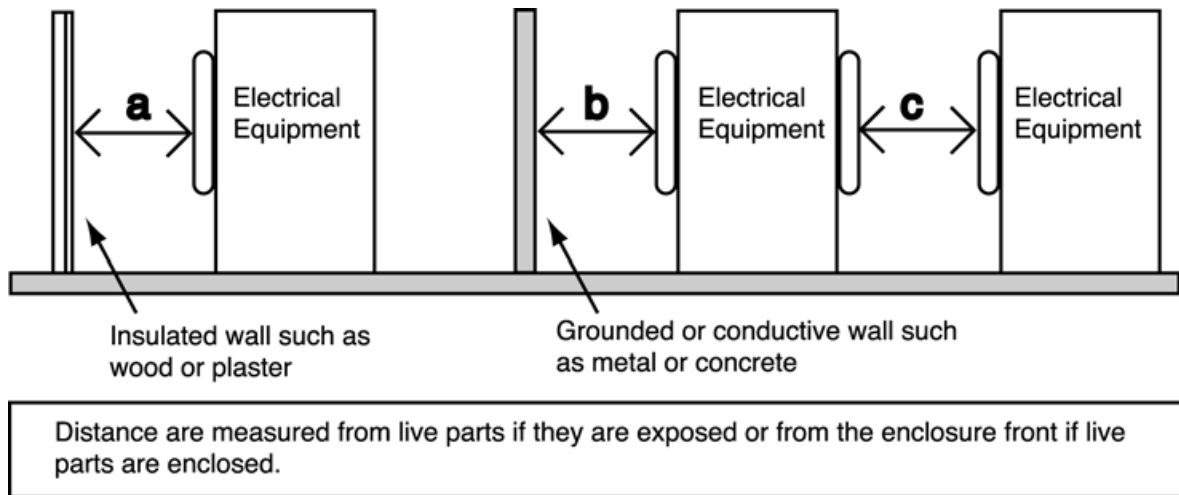
4 ft

Where:

A = exposed live parts on one side and no live or grounded parts on the other side of the working space, or exposed live parts on both sides effectively guarded by suitable wood or other insulating material. Insulated wire or insulated bus bars operating at not over 300 volts aren't considered live parts

B = exposed live parts on one side and grounded parts on the other side

C = exposed live parts on both sides of the workspace, not guarded as provided in condition A, with the operator between the panels.



## J. MAINTAIN ALL FLEXIBLE CORDS & CABLES IN GOOD CONDITION & USE SAFELY

**Exemption:** Rules do not apply to cords and cables that are an internal part of factory-assembled appliances and equipment, like the windings on motors or wiring inside electrical panels.

1. Perform a visual inspection of all flexible cords and cables on portable cord and plug connected equipment and extension cords before each use. It is not required that you visually inspect portable cord and plug connected equipment and extension cords that stay connected once in place and aren't exposed to damage until they are moved. Defects and damage to look for include:
  - a. Loose parts;
  - b. Deformed or missing pins;
  - c. External defects and damage;
  - d. Damage to the outer covering or insulation; and
  - e. Pinched or crushed covering or insulation that might indicate internal damage.
2. Remove from service any defective or damaged cord until repaired and tested.
3. Use flexible cords only as follows:
  - a. Wiring of equipment and appliances;
  - b. Data processing cables approved as a part of the data process system;
  - c. Pendants (a lampholder or cord-connector body suspended by a length of cord properly secured and terminated directly above the suspended device);
  - d. Wiring for fixtures;

- e. Connecting portable lamps or appliances to an approved outlet with an attached plug;
  - f. Connecting stationary equipment that is frequently changed with an attachment plug energized from an approved outlet;
  - g. Preventing noise or vibration transmission in cases where vibration might fatigue fixed wiring and result in a situation more hazardous than flexible cord.);
  - h. Appliances that have been designed to permit removal for maintenance and repair if the appliance is equipped with an attachment plug energized from an approved outlet;
  - i. Elevator cables; or
  - j. Wiring of cranes and hoists.
4. Do NOT use flexible cords in the following ways:
    - a. As a substitute for fixed wiring of a structure;
    - b. To run through holes in walls, ceilings, or floors;
    - c. To run through doorways, windows, or similar openings;
    - d. To attach to building surfaces;
    - e. To conceal behind building walls, ceilings, or floors; or
    - f. To raise or lower equipment.
  5. If additional power supplies are needed, utilize an approved surge protector with multiple outlets.
  6. Extension cords cannot be plugged into or piggy-backed onto other extension cords or surge protectors.
  7. If the light on the surge protector is flickering or off, remove the surge protector from service. This flickering or absence of a light indicates that a power surge has gone through the surge protector, and it is no longer working appropriately.
  8. Cheater boxes plugged into electrical receptacles are not allowed.
  9. Do not fasten or hang cords and equipment in any way that could cause damage to the outer jacket or insulation of the cord. Use tension relief devices.
  10. Use flexible cords and cables in the way they were intended to be used.
  11. Ensure insulation on flexible cords and cables is intact.
  12. Flexible cords and electrical cords must be connected to devices and fittings so that any pulling force on the cord is prevented from being transmitted to joints or terminal screws on the plug.
  13. Flexible cords and electric cords must be used only in continuous lengths without splice or tap.
  14. Do not plug or unplug equipment or extension cords of equipment that is energized using wet hands.

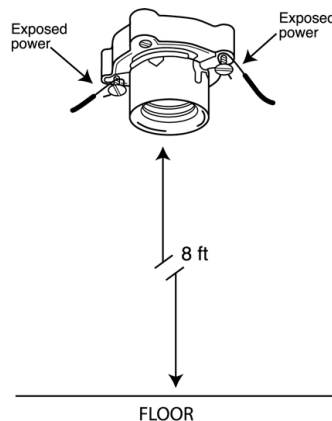
## **K. TEMPORARY USE OF CORDS**

1. Temporary electrical power and lighting installations that operate at 600 volts or less are used only:
  - a. During and for remodeling, maintenance, repair or demolition of buildings and similar activities;
  - b. For experimental or development work; and
  - c. For no more than 90 days for:
    - i. Christmas decorative lighting;
    - ii. Carnivals; or
    - iii. Other similar purposes.

2. Flexible cords and electrical cords used on a temporary basis must be protected from accidental damage by avoiding sharp corners and projections, especially where they pass through doorways or other pinch points.

## L. GUARD ELECTRICAL EQUIPMENT TO PROTECT EMPLOYEES FROM ELECTRICAL HAZARDS

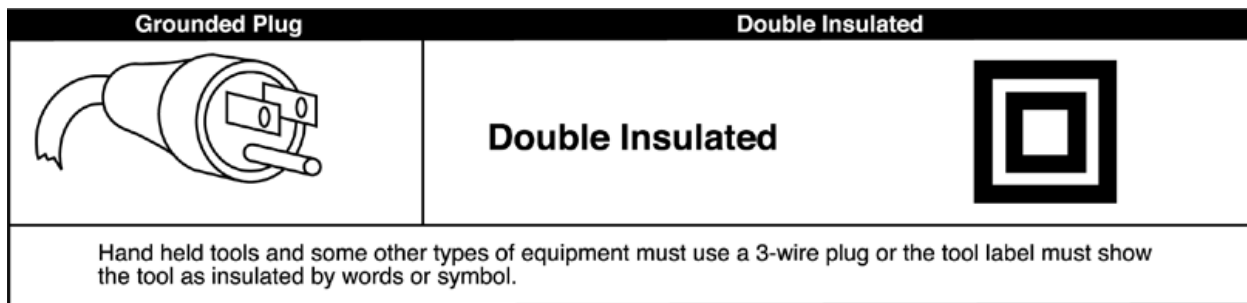
1. Guard live parts of electrical equipment operating at 50 volts or more against accidental contact by any of the following means:
  - a. Approved cabinets or other forms of approved enclosures.
  - b. By location in a room, vault or similar enclosure that is accessible only to employees qualified to work on the equipment. Entrances to rooms and other guarded locations containing exposed live parts must be marked with conspicuous warning signs forbidding unqualified persons from entering.
  - c. By permanent, substantial partitions or screens so that only employees qualified to work on the equipment will have access within reach of the live parts. Any openings must prevent accidental contact with live parts by employees or objects carried by employees.
  - d. By location on a balcony, gallery, or platform that will exclude unqualified personnel.
  - e. By being located 8 feet or more above the floor or other working surface.
2. All electrical appliances, fixtures, lampholders, lamps, rosettes, and receptacles should not have live parts normally exposed to employee contact. Rosettes and cleat type lampholders at least 8 feet above the ground may have exposed parts.
3. In locations where electric equipment would be exposed to physical damage, enclosures or guards must be so arranged and of such strength as to prevent such damage.



## M. ENSURE ELECTRICAL EQUIPMENT IS EFFECTIVELY GROUNDED

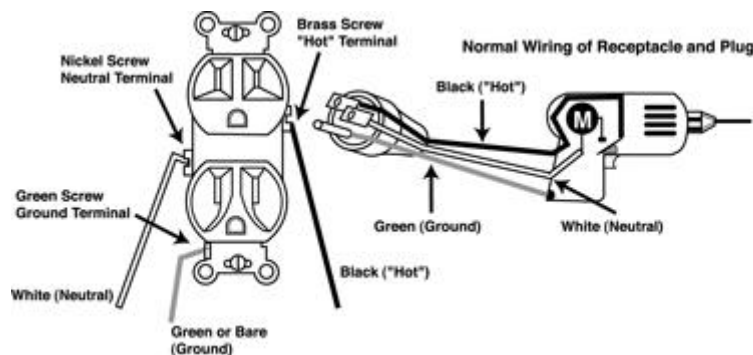
1. The path to ground from circuits, equipment, and enclosures must be permanent and continuous.
2. Grounding prongs must not be removed from electrical cords, and each electrical receptacle must provide a location for a ground prong. Cords without grounding prongs must not be used.
3. Equipment connected by cord and plug must be grounded under these conditions:
  - a. Equipment with exposed noncurrent carrying metal parts;
  - b. Cord and plug connected equipment which may become energized;
  - c. Equipment that operates at over 150 volts to ground; and
  - d. Equipment in hazardous locations.

4. You must ground the following type of equipment:
  - a. Hand-held motor-operated tools;
  - b. Refrigerators;
  - c. Freezers;
  - d. Air conditioners;
  - e. Clothes washers and dryers;
  - f. Electrical aquarium equipment;
  - g. Hedge clippers
  - h. Electric lawn mowers;
  - i. Electric snow blowers;
  - j. Web scrubbers;
  - k. Tools likely to be used in damp or wet locations;
  - l. Appliances used by employees standing on the ground, on metal floors, or working inside of metal tanks or boilers; and
  - m. Portable hand lamps.
5. Grounding can be achieved by using tools and appliances equipped with an equipment grounding conductor (3-prong plug and grounded electrical system).



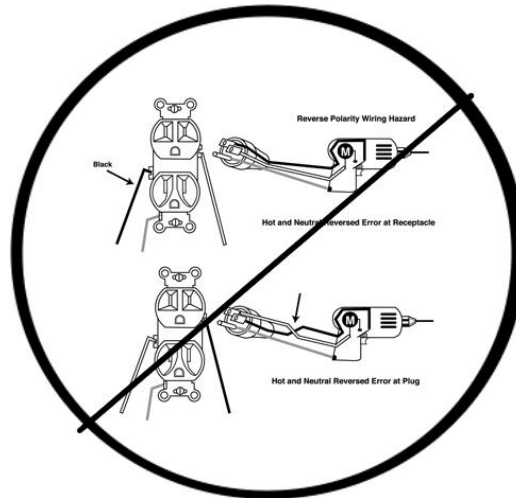
6. Exposed metal parts of fixed equipment that don't conduct electricity but may become energized must be grounded if the equipment is in a wet or damp location and isn't isolated.
7. Grounded wires must be identified and look different than other conductors (wires).
8. Grounded conductors should not be attached to any terminal or lead to reverse polarity of the electrical outlet or receptacle. (See illustrations below showing examples of wiring.)

**Correct Wiring**





## Incorrect Wiring



Reverse polarity wiring can cause a faulty tool to start as soon as it is plugged in or not stop when the switch is released. This could cause an injury. An extremely dangerous type of reverse polarity wiring switches the hot and ground wires. This causes the body of the tool or appliance to be "hot". Touching the tool and conductive surface can result in serious or even deadly shock.

## N. ELECTRICAL EQUIPMENT HAS OVERCURRENT PROTECTION

1. All electrical circuits that are rated at 600 volts or less must have overcurrent protection.
2. Protect conductors and equipment according to their ability to safely conduct electrical equipment.
3. Overcurrent devices should not interrupt the continuity of grounded conductors unless all conductors are opened at the same time, except for motor running overload protection.
4. Protect employees from electrical arcing or suddenly moving electrical parts by locating fuses and circuit breakers in safe places. If this isn't possible, install shields on fuses and circuit breakers.
5. The following fuses and thermo cutouts should have disconnecting mechanisms:
  - a. All cartridge fuses accessible to nonqualified persons;
  - b. All fuses on circuits over 150 volts to ground;
  - c. All thermal cutouts on circuits over 150 volts to ground;
  - d. The disconnecting mechanism must be installed so you can disconnect the fuses or thermal cutouts without disrupting service to equipment and circuits unrelated to those protected by the overcurrent device.
6. Provide easy access to overcurrent devices for each employee and for authorized building management personnel.
7. Protect the overcurrent devices by locating them away from easily ignitable material. They must be placed to avoid exposure to physical damage.
8. Circuit breakers:
  - a. Must clearly indicate when they are open (off) and closed (on);
  - b. That operate vertically must be installed so the handle is in the "up" position when the break is closed (on);
  - c. Used as switches in 120-volt, fluorescent lighting circuit must be approved for that purpose and marked "SWD"; and

- d. That have arcing or suddenly moving parts should be shielded or located so employees won't get burned or injured by the operation of the circuit breaker.
9. Fuses that have arcing or suddenly moving parts must be shielded or located so employees won't get burned or injured by the operation of the fuses.

## **O. GROUND-FAULT CIRCUIT INTERRUPTERS (GFCI)**

GFCIs sense imbalances or differences along the electric circuit and shut it down when needed.

1. OAR 437-003-0404 requires ground-fault circuit interrupters (GFCIs) on all 125-volt, single-phase, 15-, 20-, and 30-ampere receptacles that are not part of the permanent wiring of a building or structure.
2. If a permanently wired receptacle not equipped with GFCI protection is used for temporary power in a construction project, GFCI protection must be provided at the user end.
3. Portable plug-in and cord-type GFCIs are probably the most practical devices for construction workers who use cord sets for temporary power when there is no protection at the source.
4. GFCIs are critical to workers in wet environments. The rule for GFCI does not exempt work with intrinsically safe or double-insulated tools.
5. GFCIs must either be built into the overall circuit as part of the outlet receptacle, or workers must use protected cord sets or GFCI devices.
6. GFCI protection can be anywhere on the circuit as long as it works effectively to protect the worker. Protection can be for the entire circuit, the outlet receptacle, or the extension cord.
7. For receptacles with more than 125 volts, single-phase, or more than 30-amp capacity, use GFCI or have a program that ensures equipment is grounded.
8. If a job site requires specific procedures, there must be a written description of the equipment-grounding program. One or more competent persons should be designated to run the program.
9. Conduct periodic tests of all grounding conductors for continuity and test each receptacle or plug to ensure that the grounding conductor is connected to the right terminal. Testing is required before the first use, before the first use after repair, before use after any event that could cause damage, and periodically thereafter.
10. GFCIs utilized at construction sites for temporary services must be tested periodically, and the results of the tests must be recorded. Record by identifying each cord, receptacle, or piece of equipment and its test date or test interval. Keep the test record until a new record replaces it. These records must be available on the job site.
11. All electrical receptacles located within 6 feet of a water source, such as a sink, must have a GFCI on the receptacle or the circuit that controls that receptacle.

## **P. WORKING AROUND BURIED ELECTRICAL LINES**

1. Anytime workers are required to start any in-ground work such as excavations, digging, or driving objects into the ground, they must contact the Oregon Utility Notification Center (OUNC) before starting work. The OUNC will contact the utilities in the vicinity of the excavation to have them mark their utility lines and pipes. To contact the OUNC, Call 811. Except in cases of emergency, allow 48-hours for the utilities to respond.
2. The primary contractor or facilitator of the work is responsible to contact OUNC and also must ensure that power to any electrical lines in the area of work has been de-energized to ensure employee safety.
3. If a worker contacts an underground line or pipe, he/she should stop work immediately and notify the affected utility.
4. The contractor or responsible party is responsible for all repair costs if they did not contact OUNC before starting work.

## Q. WORKING AROUND OVERHEAD ELECTRICAL LINES

1. The *High Voltage Overhead Line Safety Act* provides that no work activities take place within 10 feet of a high voltage overhead power line until the following requirements are met:
  - a. The responsible party must notify the utility operating the line of the intended work activity; and
  - b. The responsible party and the utility must complete mutually satisfactory precautions for the activity.
2. As soon as you inform your local utility of your intended work activity, the following can occur:
  - a. Coordination of work schedules;
  - b. Identification of temporary mechanical barriers to prevent contact with the lines;
  - c. Temporary de-energizing and grounding of the lines; and
  - d. Temporary raising or moving of the lines.

## R. PERSONAL PROTECTIVE EQUIPMENT

1. Employees must wear appropriate Personal Protective Equipment (PPE) when working around electrical sources. See Chapter 13 of this [Safety Manual](#) for more information.
2. Electrical protective equipment must be maintained in a safe and reliable condition. Electrical protective equipment is subject to regular electrical tests to ensure it is still providing protection to the employee.
3. Insulating equipment must be inspected for damage before each day's use and immediately following any incident that can reasonably be suspected of having caused damage. Insulating gloves must be given an air test along with the inspection.
4. Insulating equipment must be stored in such a location and in such a manner as to protect it from light, temperature extremes, excessive humidity, ozone, and other injurious substances and conditions.
5. Insulating equipment with any of the following defects may not be used:
  - a. A hole, tear, puncture or cut;
  - b. Ozone cutting or ozone checking (the cutting action produced by ozone on rubber under mechanical stress produces a series of interlacing cracks);
  - c. An embedded foreign object;
  - d. Any of the following texture changes: swelling, softening, hardening, or becoming sticky or inelastic; or
  - e. Any other defect that damages the insulating properties.

## S. RESPONSIBILITIES

1. Supervisors are responsible for the overall implementation of the Electrical Safety Program.
2. Employees exposed to electrical hazards must be trained on working around them. Training must be documented.
3. Authorized employees are to receive additional specialized training as needed.

# CHAPTER 27: LADDER SAFETY

## A. PURPOSE

We take portable ladders for granted because they're so easy to use. Yet more workers are injured in falls from ladders than from any other elevated surface — roofs, scaffolds, balconies, even stairs. Why do workers fall from ladders? Most falls happen because workers select the wrong type of ladder for the job or the ladder is set up improperly or the ladder shifts or slips unexpectedly. Workers also fall when their foot slips, they lose their balance, they overreach, or something knocks the ladder over.

## B. APPLICABLE LEGAL STANDARDS

1. [OAR 437 General Industry 2/D – Walking working surfaces](#)
2. Ladder Regulations
  - a. 437-002-0026(5)(a-h)
    - i. Step spacing must be uniform and not more than 12 inches. Steps must be parallel and level when the ladder is in the normal use position.
    - ii. All joints, attachments and working parts of ladders must be tight and not worn to a point that it causes a hazard. Do not use ladders with damaged or bent parts.
    - iii. Replace frayed or badly worn rope.
    - iv. Safety feet and other auxiliary equipment must in good condition.
    - v. Inspect ladders and remove from use any with defects. Ladders awaiting repair must be tagged, "Dangerous, Do Not Use."
    - vi. There can be no dents, breaks or bends in the side rails or rungs;
    - vii. Do not make ladders by fastening cleats across a single rail.
    - viii. Portable ladders must have non-slip bases.
  - b. 437-002-0026(7)(h)(A-C)

Secure ladders as necessary when used on surfaces that may allow slipping or movement. Use one of the following methods:

- i. non-slip bases on the ladder feet; or,
- ii. steel points or safety shoes on the ladder feet, designed for the type of surface the ladder is on; or
- iii. nail the ladder to the floor, or set it against secured blocks or chocks.

## C. DEFINITIONS

1. **Cleat:** A rectangular ladder crosspiece placed on edge, upon which a person may step while ascending or descending.
2. **Competent person:** One who can identify existing and predictable hazards where employees work and who can take prompt corrective measures to eliminate the hazards.
3. **Extension ladder:** A non-self-supporting portable ladder that is adjustable in length. It consists of two or more sections in guides or brackets that permit length adjustment. Length is designated by the sum of the lengths of each section, measured along the side rails.
4. **Extension trestle:** A self-supporting portable ladder that is adjustable in length, consisting of a trestle ladder base and a vertically adjustable single ladder with means for locking the ladders together. Length is designated by the length of the trestle ladder base.

5. **Fastening:** A device that attaches a ladder to a structure, building, or equipment.
6. **Platform ladder:** A self-supporting ladder of fixed size with a platform at the working level.
7. **Rungs:** Ladder crosspieces on which a person steps when ascending or descending.
8. **Single (or straight):** A single section non-self-supporting portable ladder, nonadjustable in length. Its length is measured along a side rail.
9. **Special-purpose:** A general-purpose portable ladder with modified features for specific uses.
10. **Stepladder:** A self-supporting portable ladder, nonadjustable in length that has flat steps and a hinged back. Length is measured along the front edge of a side rail.
11. **Steps:** The flat crosspieces of a ladder on which a person steps when ascending or descending.
12. **Trestle ladder:** A self-supporting portable ladder, nonadjustable in length that consists of two sections hinged at the top to form equal angles with the base. Length is measured along the front edge of a side rail.

**D. LADDER TYPES**

Which ladder is the right one for your job? You'll save time, energy and reduce your risk of injury if you select the correct one. Key factors are type and style, length, duty rating, and the material from which the ladder is made. Most portable ladders are either non-self-supporting, such as an extension ladder, or self-supporting, such as a standard stepladder. But there are also combination ladders that convert quickly from a stepladder to an extension ladder. You're likely to find the right size, shape, and type of ladder to accomplish your task within one of these categories.

1. **Extension ladders (non-self-supporting).** Extension ladders offer the greatest length in a general-purpose ladder. The ladder consists of two or more sections that travel in guides or brackets, allowing adjustable lengths. The sections must be assembled so that the sliding upper section is on top of the lower section. Each section must overlap its adjacent section a minimum distance, based on the ladder's overall length. The overall length is determined by the lengths of the individual sections, measured along the side rails. The table below shows the minimum overlap for two-section ladders up to 60 feet long.



Ladder length	Overlap
Up to 36 feet	3 feet
36 to 48 feet	4 feet
48 to 60 feet	5 feet

- a. Most extension ladders are made of wood, aluminum, or reinforced fiberglass. Wood ladders can't have more than two sections and must not exceed 60 feet. Aluminum and fiberglass ladders can have as many as three sections; however, the overall length must not exceed 72 feet. Individual sections of any extension ladder must not be longer than 30 feet.
- b. Extension ladders can be used only by one person at a time.
- c. **Is it necessary to "tie off" an extension ladder to prevent it from slipping?** You don't have to tie off the ladder but you do have to ensure that the ladder cannot be accidentally moved or displaced. Tying off the top or bottom of a ladder is one way to ensure that it cannot be accidentally moved or displaced.

2. **Standard stepladders (self-supporting).** The standard stepladder has flat steps and a hinged back. It is self-supporting and nonadjustable. Standard stepladders should be used only on surfaces that have a firm, level footing such as floors, platforms, and slabs. They're available in aluminum, wood, or reinforced fiberglass and are intended to support only one worker at a time.



- a. Stepladders must have metal spreaders or locking arms and can't be longer than 20 feet, measured along the front edge of the side rails.
- b. **Do not stand on the top step.**
- c. **Can I use a standard stepladder like a straight ladder?** Using a standard stepladder in a closed position is not a safe practice because it's more likely to slip on surfaces such as concrete and wood than a straight ladder. Standard stepladders are designed to be used only when the spreader arms are open and locked. If a standard stepladder doesn't meet your needs, choose an appropriate straight ladder or a combination ladder.

3. **Two-way stepladder.** The two-way stepladder is similar to the standard stepladder; however, each side of this ladder has a set of steps. One person can work from either side or two people can work from the ladder at the same time — one on each side.



4. **Platform ladder.** The platform ladder is a special-purpose ladder that has a large, stable work platform. The ladder's length is determined by the length of the front edge of the side rail from the bottom of the ladder to the base of the platform; it can't exceed 20 feet.



5. **Orchard ladder.** The orchard ladder is a special-purpose ladder for pruning and harvest work. It has a flared base and a single back leg that offers support on soft, uneven ground.



- a. Orchard ladders are intended for use by only one person at a time and can't be longer than 16 feet.
- b. Wood, aluminum, and reinforced fiberglass versions are available.
- c. A more rigid orchard ladder, the so-called double base version, incorporates a triangular box brace with stub rails attached to the bottom step. The ladder is available in wood or with a combination wood or fiberglass rail and metal step. Maximum length is 16 feet and it is intended for use by one person.
- d. Do not stand on the top step of an orchard ladder.
- e. **Can orchard ladders be used on construction sites?** Yes. In fact, orchard ladders are often safer on uneven or sloped ground than conventional stepladders. An orchard ladder is designed to be used on soil or turf so that each leg slightly penetrates the ground. Orchard ladders should never be used on concrete or hard surfaces. **Tripod ladders** that have spreader braces — also called electrician's ladders — are common on construction sites, too.

6. **Trestle ladder.** A trestle ladder is a self-supporting portable ladder that has two sections hinged at the top, forming equal angles with the base. A variation of the trestle ladder, the extension trestle ladder, includes a vertically adjustable single ladder that can be locked in place. (The single extension section must lap at least 3 feet into the base section.) Trestle ladders are used in pairs to support planks or staging. The rungs are not intended to be used as steps. The angle of spread between open front and back legs must be  $5\frac{1}{2}$  inches per foot of length. The length can't be more than 20 feet, measured along the front edge of the side rails. Rails must be beveled at the top and have metal hinges to prevent spreading. Metal spreaders or locking devices are required to keep the rails in place.



7. **Combination ladders and multipurpose ladders.** These ladders share many of the features of stepladders and extension ladders. Most quickly convert from standard stepladders to extension ladders, and many can be used in three or more variations — such as a stairway ladder, two-way stepladder, or a self-supporting scaffold base.

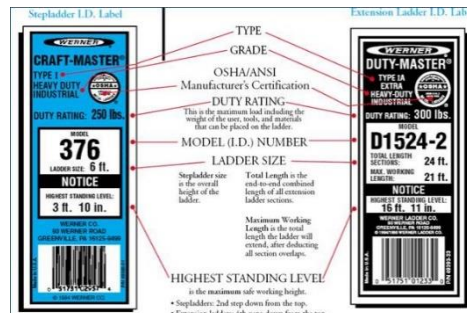


**E. LADDER SELECTION**

1. Determine the proper length.
  - a. **Standard stepladders.** You should be able to reach about 4 feet above the top of the ladder when you're standing two steps down from the top. For example, you should be able to reach an 8-foot ceiling on a 4-foot ladder. Never use the top of a stepladder as a step.
  - b. **Extension ladders.** The total length of an extension ladder should be 7-10 feet longer than the vertical distance to the upper contact point on the structure — a wall or roofline, for example. Never stand on the ladder rungs that extend above a roofline.
2. Determine the duty rating.

Manufacturers give ladders duty ratings, based on the maximum weight they can safely support. The worker's weight plus the weight of any tools and materials that are carried onto the ladder must be less than the duty rating. Before you purchase a ladder consider the maximum weight it will support. Don't subject it to a load greater than its duty rating. Duty ratings for portable ladders:

- a. Special duty (I-AA) 375 pounds
- b. Extra heavy duty (I-A) 300 pounds
- c. Heavy duty (I) 250 pounds
- d. Medium duty (II) 225 pounds
- e. Light duty (III) 200 pounds



3. Determine the right material.

- a. **Wood.** Wood provides a natural feel and good insulation against heat and cold. However, untreated wood ages quickly; wood ladders need a protective coat of clear varnish to keep the wood from drying and splitting. Also, wood ladders are heavy, particularly longer ones.
- b. **Aluminum.** Aluminum ladders are lightweight and corrosion resistant. Aluminum will not crack or chip with rough handling; however, aluminum doesn't insulate well against heat and conducts electricity. Never use aluminum ladders for work near energized electrical lines.
- c. **Fiberglass.** Fiberglass is durable, weather resistant, and nonconductive when clean and dry. Unlike wood, fiberglass won't dry out or split and provides better insulation against heat than aluminum. However, fiberglass ladders are heavier than comparable aluminum or wood ladders and can chip or crack with improper handling.

Fiberglass ladders must also be handled and maintained with more care than wood ladders. After a few years, the reinforcing fibers in fiberglass rails may become exposed, resulting in a condition known as “fiber bloom.” High humidity and exposure to strong sunlight can accelerate the condition. Fiber bloom doesn’t affect a ladder’s strength but it will affect the appearance and may cause users mild discomfort if exposed fibers penetrate their skin. Regular washing and waxing with a commercial non-slip paste wax will protect the ladder and reduce the potential for fiber bloom. Periodically coating the ladder with acrylic lacquer or polyurethane also will protect it.

## F. LADDER SET-UP

1. Setting up the ladder.
  - a. Move the ladder near your work. Get help if the ladder is too heavy to handle alone.
  - b. Lock the spreaders on a stepladder. Secure the lock assembly on extension ladders.
  - c. Make sure there are no electrical wires overhead.
  - d. Use traffic cones or other barriers to protect the base of the ladder if vehicles or pedestrians could strike it.
  - e. Make sure that a non-self-supporting ladder extends at least 3 feet above the top support point for access to a roof or other work level. Do not step on rungs above the upper support.
  - f. Angle non-self-supporting ladders properly. The length of the side rails from the ladder’s base to the top support points (the working length) should be four times the distance from ladder’s base to the structure (the set-back distance). Done correctly, this results in a 4:1 set-up angle.

2. Achieving a 4:1 set-up angle.

A non-self-supporting ladder should have a set-up angle of about 75 degrees — a 4:1 ratio of the ladder’s working length to set-back distance. Here’s how to achieve it: Stand at the base of the ladder with your toes touching the rails. Extend your arms straight out in front of you. If the tips of your fingers just touch the rung nearest your shoulder level, the angle of your ladder has a 4:1 ratio.

3. Five steps for setting up an extension ladder.
  - a. The ladder should be closed. Position the ladder with the base section on top of the fly section. Block the bottom of the ladder against the base of the structure.
  - b. Make sure there is clearance and no electrical lines are overhead. Carefully “walk” the ladder up until it is vertical. Keep your knees bent slightly and your back straight.
  - c. Firmly grip the ladder, keep it vertical, and carefully move back from the structure about one quarter the distance of the ladder’s working length. This allows you to place it at the correct angle against the structure.
  - d. Raise the fly section. After the bottom rung of the fly section clears the bottom rung of the base section, place one foot on the base rung for secure footing.
  - e. Lean the ladder against the structure. The distance from the base of the ladder to the structure should be one quarter the distance of the ladder’s working length. Make sure the ladder extends 3 feet above the top support points for access to a roof or other work level. Both rails should rest firmly and securely against the structure.

## G. LADDER INSPECTION

1. Neglected ladders quickly become unsafe ladders. Step bolts loosen, sockets and other joints work loose, and eventually the ladder becomes unstable. Periodic maintenance extends a ladder’s life and saves replacement costs. Maintenance includes regular inspection, repairing damage, and tightening step bolts and other fastenings.



2. Inspect your ladder each time you use it. (A competent person must periodically inspect ladders for defects and after any occurrence that could make them unsafe.)
3. Replace lower steps on wooden ladders when one-fourth of the step surface is worn away. Typically, the center of a step receives the most wear. Mineral abrasive or other skid-resistant material reduces wear.
4. Don't paint wood ladders; paint conceals defects.
5. Clean and lightly lubricate moving parts such as spreader bars, hinges, locks, and pulley.
6. Inspect and replace damaged or worn components and labels according to the manufacturer's instructions.
7. Inspect the rails of fiberglass ladders for weathering, fiber bloom, and cracks.
8. Keep the ladder away from heat sources and corrosive materials.

## **H. LADDER STORAGE**

1. The best way to extend a ladder's life is proper storage, including the following steps: Use a well-ventilated storage area.
2. Store wood and fiberglass ladders away from excessive moisture, heat, and sunlight.
3. Keep ladders away from stoves, steam pipes, or radiators.
4. Store non-self-supporting ladders in flat racks or on wall brackets that will prevent them from sagging.
5. Secure ladders so that they won't tip over if they are struck.
6. Keep materials off ladders while they are stored.

## **I. LADDER TRANSPORTING**

1. When carrying a ladder, keep the front end elevated, especially around blind corners, in aisles, and through doorways to reduce the chance of striking another person with the front of the ladder.
2. When you transport a ladder in a truck or a trailer, make sure that it's properly supported parallel to the bed. Pad the support points with soft, non-abrasive material such as rubber or carpeting and tie the ladder securely to eliminate chafing and road shock.

## **J. LADDER SAFE WORK PRACTICES**

1. Wear shoes that have non-slip soles.
2. Face the ladder while climbing and descending. Center your body between the rails and keep your hips square to the rungs. Hold the side rails with both hands to avoid a fall if a rung or step fails.
3. Hold the ladder with one hand and work with the other hand whenever possible.
4. Attach light, compact tools or materials to the ladder or to yourself.
5. Raise and lower heavy, awkward loads with a hand line or a hoist.
6. Do not carry objects or loads while ascending or descending the ladder that could cause a loss of balance.
7. Use extreme caution when pushing or pulling materials.
8. When portable ladders are used for access to an upper landing, the side rails should extend at least 3 feet above the upper landing. When this is not possible, the ladder should be secured to a rigid support at its top and a grab rail should be available to help employees get off the ladder.
9. Ladders should be kept free of oil, grease, and other hazards that could cause slips.
10. Ladders should not be loaded beyond the manufacturer's duty rating.

11. Ladders should be used only for the purpose for which they were designed.
12. Ladders should be used on stable, level surfaces or should be secured so that they cannot be displaced. Ladders should not be used on slippery surfaces unless they are secured or have slip-resistant feet.
13. All ladders, except step-ladders, should have non-slip safety feet.
14. Employees are prohibited from placing ladders on boxes, barrels, or other unstable objects.
15. Ladders used near passageways, doorways, or driveways should be protected so that vehicles or pedestrians do not strike them.
16. The area around the top and bottom of a ladder should be free from slipping and tripping hazards.
17. The top of a non-self-supporting ladder should be placed so that both rails are supported equally.
18. Ladders should not be moved, shifted, or extended when they are occupied.
19. Ladders that could contact exposed energized electrical equipment should have nonconductive side rails.
20. Portable aluminum ladders should have legible signs reading: "CAUTION: Do Not Use Around Electrical Equipment" or equivalent wording.
21. The top step of a stepladder should not be used as a step.
22. Cross bracing on the rear section of a stepladder is not used for climbing unless the ladder is designed for that purpose.
23. Employees are prohibited from using ladders that are missing steps, rungs, cleats, or have broken side rails or other faulty parts.
24. A competent person should inspect ladders for defects periodically and after any occurrence that could damage them.
25. Defective ladders should be marked as defective or tagged "Do Not Use" and removed from service until they are repaired.
26. Repaired ladders must meet their original design criteria before they are returned to service.
27. Employees should know the hazards associated with ladder use and follow procedures that minimize the hazards.
28. Employees who use ladders should receive training by a competent person in proper use, placement and handling. Retraining should be provided periodically to ensure that employees maintain their knowledge.

# APPENDIX 1: ACCIDENT/INCIDENT REPORT

## ACCIDENT/INCIDENT REPORT

**This report is to be completed by an Employee and submitted to his/her Supervisor within 24 hours from the time of an Incident, Accident, Injury, Exposure, or Illness (also referred to as an Accident/Incident).**

Employee Name: _____	Job Title: _____
Date of Accident/Incident: _____	Time of Accident/Incident: _____
Location of Accident/Incident: _____	
Date Accident/Incident Reported: _____	Time Accident/Incident Reported: _____
Accident/Incident Reported To: _____	
Supervisor: _____	801 Claim Filed? ( ) Yes ( ) No
Name(s) of witnesses: _____ <b>(Complete 801 if medical treatment is sought)</b>	

### Parts of the Body Affected:

	Left Side	Right Side
<b>Head/Neck</b>		
Scalp		
Neck		
Ears		
Eyes		
Mouth		
Teeth		
Face		
<b>Upper Extremities</b>		
Shoulder		
Upper Arm		
Elbow		
Forearm		
Wrist		
Hand		
Fingers		
<b>Lower Extremities</b>		
Thigh		
Lower Leg		
Knee		
Ankle		
Foot/Toes		
<b>Trunk</b>		
Lower Back		
Upper Back		
Chest		
Abdomen		
Hip		
Groin		

### Nature of Injury:

<input type="checkbox"/> Cut	<input type="checkbox"/> Foreign Body in Eye or Sliver
<input type="checkbox"/> Scrape	<input type="checkbox"/> Burn
<input type="checkbox"/> Bruise	<input type="checkbox"/> Electric Shock
<input type="checkbox"/> Skin Rash	<input type="checkbox"/> Difficulty Breathing
<input type="checkbox"/> Numbness	<input type="checkbox"/> Inflammation
<input type="checkbox"/> Dizziness	<input type="checkbox"/> Jammed Finger or Toe
<input type="checkbox"/> Sprain or Strain	<input type="checkbox"/> Pain in Body Part
Other: _____	

### Contributing Factors:

<input type="checkbox"/> Machinery Defect (Save defective parts & pieces)
<input type="checkbox"/> Tool of Equipment Broke (Save broken parts)
<input type="checkbox"/> Equipment Guarding
<input type="checkbox"/> Proper Tools/Equipment Not Available
<input type="checkbox"/> Floor, Work Surface, or Walking Surface
<input type="checkbox"/> Housekeeping
<input type="checkbox"/> Lighting
<input type="checkbox"/> Clothing of Jewelry
<input type="checkbox"/> Improper Ergonomics
Other: _____

### Work Behavior at Time Of:

<input type="checkbox"/> Lifting	<input type="checkbox"/> Carrying	<input type="checkbox"/> Reaching
<input type="checkbox"/> Pushing	<input type="checkbox"/> Pulling	<input type="checkbox"/> Running
<input type="checkbox"/> Bending	<input type="checkbox"/> Twisting	<input type="checkbox"/> Jumping
<input type="checkbox"/> Stepping (from one level to another)		
<input type="checkbox"/> Typing/Office Related Repetitive Motion		
<input type="checkbox"/> Other Repetitive Motion		
<input type="checkbox"/> Driving	<input type="checkbox"/> Operating Equipment	
<input type="checkbox"/> Innocent Bystander		
Other: _____		

Describe What Happened. (Include sequence of events; equipment, materials, and substances being used; include environment.) Be Specific.

---

---

---

List safety equipment employee was using/wearing:

---

---

Have you received training for or had experience with this particular task?

---

Have you had any similar incidents in the past?  Yes  No

If YES, please describe, including any dates or specific information.

---

---

What do you think can be done to prevent this incident from reoccurring?

---

---

Employee's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Report Received By: \_\_\_\_\_ Date/Time Received: \_\_\_\_\_

**To Be Completed by Employee's Supervisor:**

Why did the accident/incident happen or the condition exist? \_\_\_\_\_

---

What could have been done, or should be done, to prevent this accident/incident?

---

---

Have there been other accidents or incidents related to this same activity? \_\_\_\_\_  
If yes, what action was taken? \_\_\_\_\_

**Supervisor's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Please Obtain Witness Information on a Separate Piece of Paper and Include that in your File.**

# APPENDIX 2: ACCIDENT INVESTIGATION REPORT



Site: \_\_\_\_\_ Dept.: \_\_\_\_\_ Shift: \_\_\_\_\_

Name: \_\_\_\_\_ Date of Accident: \_\_\_\_\_ Time of Accident: \_\_\_\_\_

**Type of accident:**

- Injury                       Property Damage                       Near-miss

**Describe the accident:**

*Describe/specify the work being done, who was involved and their actions, and the accident event including the movement, object, or substance that did damage or harm.*

**Identify Unsafe Conditions and Unsafe Practices** (causes of the accident event, select all that apply):

Unsafe Conditions		Unsafe Practices	
<input type="checkbox"/>	Lack of adequate guards or safety device(s)	<input type="checkbox"/>	Failure to secure against unexpected movement
<input type="checkbox"/> 2.	Lack of adequate warning methods/system(s)	<input type="checkbox"/>	Operating/working recklessly
<input type="checkbox"/>	Fire/explosion hazard(s)	<input type="checkbox"/> 16.	Failure to warn/signal as required
<input type="checkbox"/> 3.	Unexpected movement hazard(s)	<input type="checkbox"/>	17. Disabling safety devices
<input type="checkbox"/> 5.	Poor housekeeping hazard(s)	<input type="checkbox"/>	18. Using defective equipment/tools
<input type="checkbox"/> 6.	Protruding object/obstruction hazard(s)	<input type="checkbox"/>	19. Using equipment/tools unsafely
<input type="checkbox"/>	Close clearance/congestion hazard(s)	<input type="checkbox"/>	20. Taking unsafe position or posture
<input type="checkbox"/> 8.	Atmospheric hazard(s)	<input type="checkbox"/>	21. Working on energized or moving parts
<input type="checkbox"/> 9.	Arrangement, placement, or storage hazard(s)	<input type="checkbox"/>	22. Reckless horseplay
<input type="checkbox"/>	Defective/faulty equipment, or tools	<input type="checkbox"/>	23. Failure to use adequate PPE properly
<input type="checkbox"/>	Poor visibility	<input type="checkbox"/>	24. Violation of a safety procedure or rule
<input type="checkbox"/>	Unsafe attire	<input type="checkbox"/>	25. Other:
<input type="checkbox"/>	Other:	<input type="checkbox"/>	

**Describe each of the selections in detail:**

**Identify Contributing Factors to the occurrence of the unsafe practices and conditions (check all that apply):**

- |                          |     |  |                          |     |                                 |
|--------------------------|-----|--|--------------------------|-----|---------------------------------|
| <input type="checkbox"/> | 1.  | Worn out from normal use   | <input type="checkbox"/> | 14. | Unaware of job/task hazards     |
| <input type="checkbox"/> | 2.  | Abuse or misuse by user(s)   | <input type="checkbox"/> | 15. | Inattentive to hazards          |
| <input type="checkbox"/> | 3.  | Not identified by hazard ID processes                              | <input type="checkbox"/> | 16. | Unaware of safe method          |
| <input type="checkbox"/> | 4.  | Poor housekeeping  | <input type="checkbox"/> | 17. | Low job skill level             |
| <input type="checkbox"/> | 5.  | Inadequate ventilation   | <input type="checkbox"/> | 18. | Tried to gain/save time         |
| <input type="checkbox"/> | 6.  | Congestion, lack of clearance/space                                | <input type="checkbox"/> | 19. | Tried to avoid effort           |
| <input type="checkbox"/> | 7.  | Unsafe/faulty construction, design, or set-up                      | <input type="checkbox"/> | 20. | Acted to avoid discomfort       |
| <input type="checkbox"/> | 8.  | Inadequate illumination  | <input type="checkbox"/> | 21. | Influence of emotions           |
| <input type="checkbox"/> | 9.  | Lubrication failure  | <input type="checkbox"/> | 22. | Influence of illness or fatigue |
| <input type="checkbox"/> | 10. | Exposure to extreme conditions (corrosion, vibration, temperature) | <input type="checkbox"/> | 23. | Difficult safety expectation    |
| <input type="checkbox"/> | 11. | Tampering: unauthorized modification                               | <input type="checkbox"/> | 24. | Poor visibility                 |
| <input type="checkbox"/> | 12. | Supervisor failure to correct                                      | <input type="checkbox"/> | 25. | Defective hearing               |
| <input type="checkbox"/> | 13. | Other:   | <input type="checkbox"/> | 26. | Supervisor failure to correct   |
|                          |     |  | <input type="checkbox"/> | 27. | Other:                          |

**Describe each of the selections in detail:**

**Root Causes** (process/system deficiencies that allowed/produced the contributing factors, check all that apply):

- |                          |    |                                      |                          |    |                              |
|--------------------------|----|--------------------------------------|--------------------------|----|------------------------------|
| <input type="checkbox"/> | 1. | Communication                        | <input type="checkbox"/> | 5. | Employee Selection/Placement |
| <input type="checkbox"/> | 2. | Hazard identification and/or control | <input type="checkbox"/> | 6. | Standards/policies           |
| <input type="checkbox"/> | 3. | Engineering/design                   | <input type="checkbox"/> | 7. | Supervision                  |
| <input type="checkbox"/> | 4. | Inspection/maintenance programs      | <input type="checkbox"/> | 8. | Training and/or knowledge    |

**Describe each of the selections in detail:**

### Accident Investigation Report (AIR)

**Conclusion** *(Paraphrase what happened and why it happened):*

**Actions to Prevent Recurrence** *(address all levels of causation, interim measures, and the entire operation):*

**Action Plan:**

Action Required	Work Order	Assigned To	Due Date	Completion Date

**Investigated by:** \_\_\_\_\_  
Name Date

**Safety Committee Recommends further investigation:**  Yes  No

## Attach any photographs

## APPENDIX 3: THE ACCIDENT INVESTIGATOR'S KIT

### Essential

1. Camera.
2. Tape measure - preferably 100 foot.
3. Clipboard and writing pad.
4. Graph paper.
5. Straight-edge ruler. Can be used as a scale reference in Photos.
6. Pens, pencils.
7. Accident investigation forms.
8. Flashlight.

### Helpful

1. Magnifying Glass.
2. Sturdy gloves.
3. High visibility plastic tape to mark off area.
4. First aid kit.
5. Digital recorder.
6. Identification tags.
7. Scotch tape.
8. Masking tape.
9. Specimen containers.
10. Compass.
11. Ten 4-inch spikes.
12. Hammer.
13. Paint stick (yellow/black).
14. Chalk (yellow/white)
15. Protractor.
16. Video recorder.
17. Investigator's template. (Traffic Institute, PO Box 1409, Evanston IL, 60204, Stock # 1000)

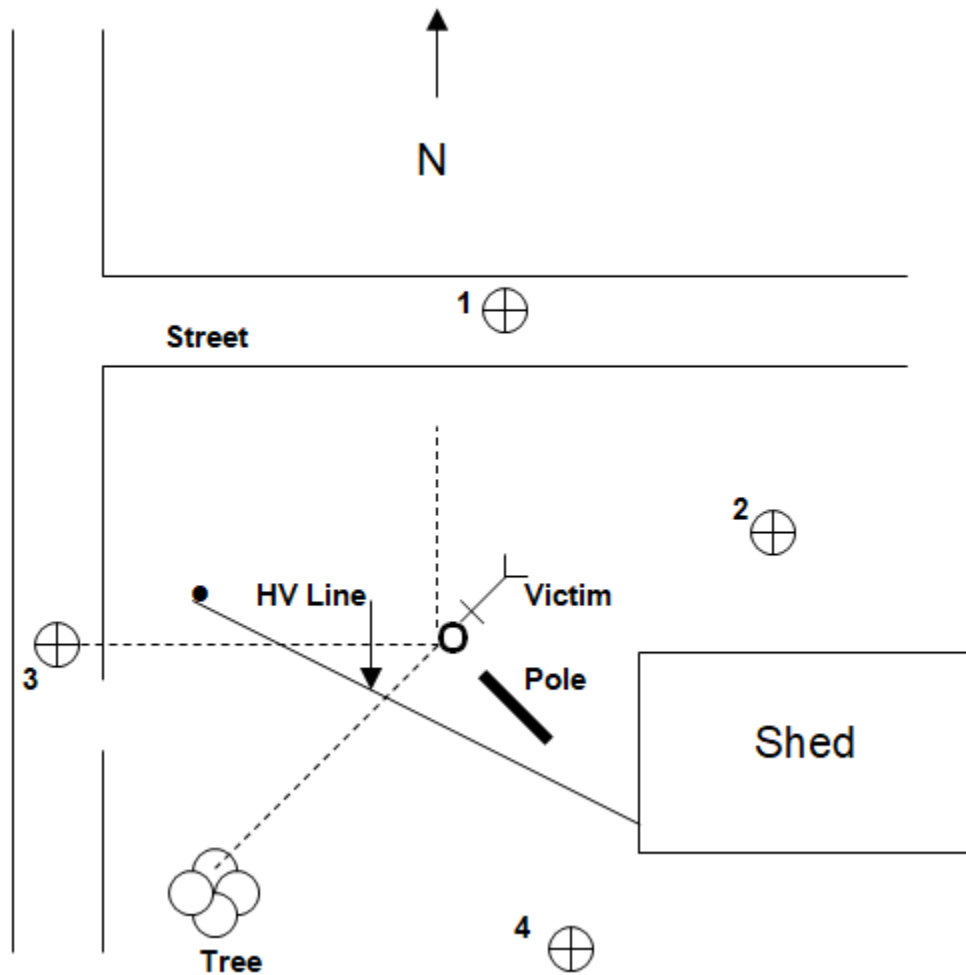


## APPENDIX 4: SKETCHING TECHNIQUES

### Techniques

1. Make sketches large; preferably 8" x 10".
2. Makes sketches clear. Include information pertinent to the investigation.
3. Include measurements.
4. Print legibly. All printing should be on the same plane.
5. Indicate directions, i.e. N,E,S,W.
6. Always tie measurements to a permanent point, e.g. telephone pole, building.
7. Use sketches when interviewing people. You can mark where they were standing. Also, it can be used to pinpoint where photos were taken.

### Triangulation Method



## APPENDIX 5: INTERVIEWING TECHNIQUES AND SKILLS

1. Keep the purpose of the investigation in mind. Determine the root cause of the accident so that similar accidents will not recur.
2. Approach the investigation with an open mind. It will be obvious if you have preconceptions about the individuals or the facts.
3. Promptness will reduce the possibility of:
  - a. Destruction of physical evidence (changed worksite);
  - b. Forgetfulness of witnesses or victims;
  - c. Interjection of opinion or conjecture by witnesses or victims after they evaluate the accident from their perspective; and
  - d. Witnesses and victims talking together and getting confused about what they know and what they have been told by others.
4. Go to the scene. Just because you are familiar with the location or the victim's job, don't assume that things are always the same.
5. Interview the people involved (victim, witnesses, people involved with the process, i.e. forklift driver, mechanic).
  - a. Attempt to do the interview at the site. Circumstances may not permit this (noise, lack of privacy, congestion). If not possible, use:
    - i. Combination (look, then go somewhere to talk);
    - ii. Photos;
    - iii. Blueprints; and
    - iv. Sketches.
  - b. Put the person at ease.
    - i. Explain the purpose and your role.
    - ii. Express concern and desire to prevent a similar occurrence.
    - iii. Express to the individual that the information given is important.
    - iv. Be friendly, understanding, and open minded.
    - v. Be calm and unhurried.
  - c. Interviews should be private and in a neutral location.
  - d. Let the individual talk.
    - i. Ask background information, name, job, etc..
    - ii. Ask the witness to tell you what happened; don't ask leading questions; don't interrupt; and don't make expressions (facial, verbal of approval or disapproval).
    - iii. Then ask questions to clarify particular areas or get specifics. Do not put the person on the defensive. Try to avoid yes and no answer questions. Try to avoid asking "why" as these type of questions tend to make people respond defensively.

*Example: You said the forklift was quite a ways away. How far away.*

- iv. Repeat the facts and sequence of events back to the person to avoid any misunderstandings.
- v. Notes should be taken very carefully, and as casually as possible. Let the individual read them if desired.
6. Don't record. However, if you feel it is necessary to record the interview, you must obtain permission from the person first.
7. Ask for their suggestions as to how the accident/incident could have been avoided.
8. Conclude the interview with a statement of appreciation for their contribution. Ask them to contact you if they think of anything else. If possible, advise these people personally of the outcome of the investigation before it becomes public knowledge.

## APPENDIX 6: SURFACE AND ROOT CAUSES

### Direct Cause of Injury

- Harmful Energy Transfer
- Kinetic, thermal, chemical, acoustic, electrical, mechanical, potential, radiant, etc.

### Primary Surface Cause

- Direct cause of the injury event
- Unique hazardous condition(s)
- Individual unsafe behavior(s)
- Controllable or uncontrollable factors
- Events occur close to the injury event
- Failure to perform safety practices, procedures, processes
- Involves the victim, other

### Secondary Surface Causes

- Indirect cause of the injury event
- Specific hazardous condition(s)
- Individual unsafe behavior(s)
- Controllable and uncontrollable factors
- Events occur distant from the injury event
- Failure to perform safety practice, procedures, processes
- Co-workers, supervisors, anytime, anywhere

### Implementation Root Causes

- Common conditions and behaviors
- Inadequate implementation of safety policies, procedures, plans
- Inadequate design of processes, procedures
- Pre-existing surface causes
- Controllable
- Middle management, anywhere, anytime

### System Design Root Causes

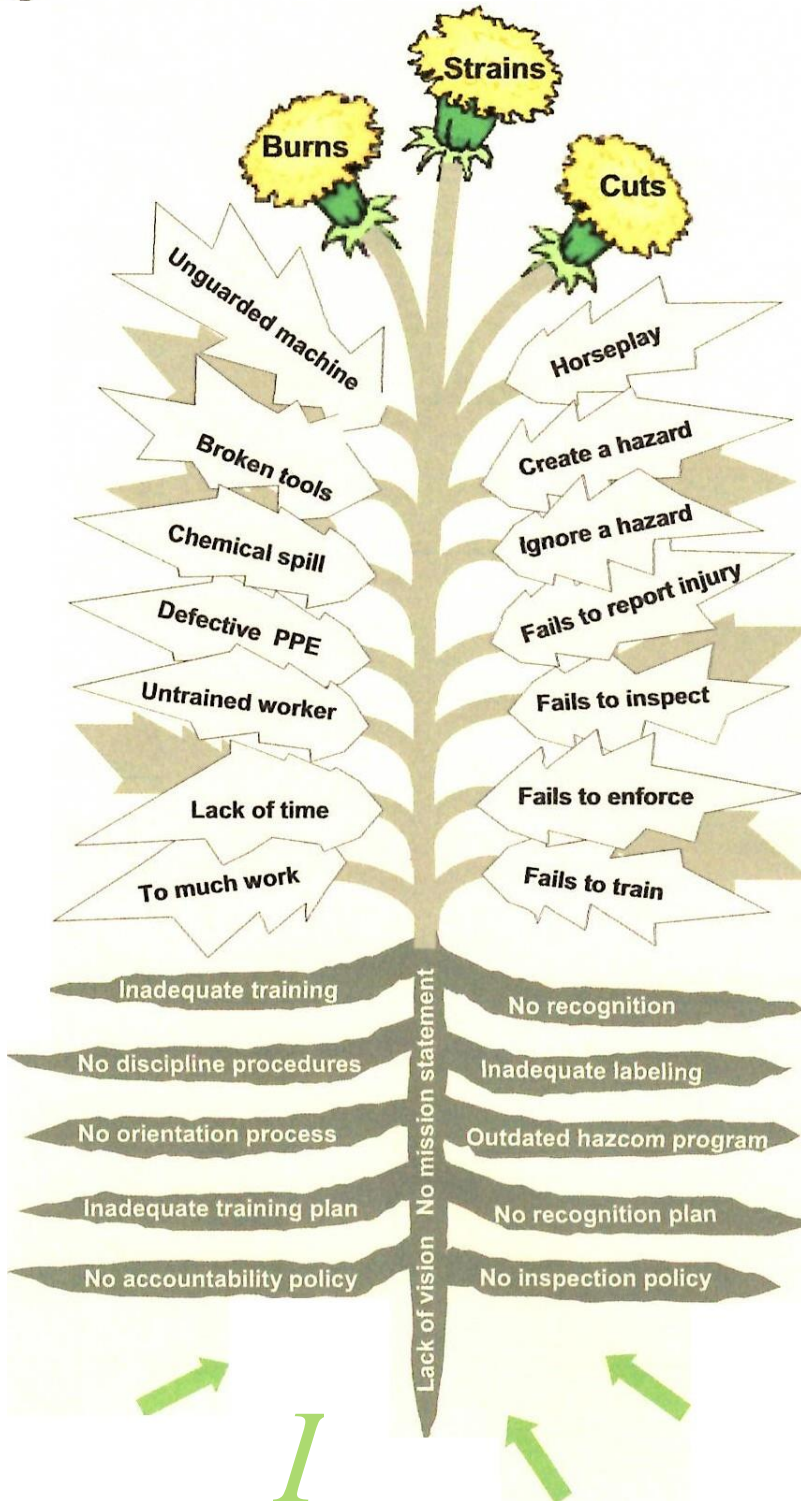
- Inadequate design of safety system, policies, programs, plans
- Pre-existing all other causes
- Controllable
- CEO, top management, anytime, anywhere

### External Environmental Causes

- Government
- Physical resources
- Human resources
- Capital
- Society



# The Accident Weed



## Direct Cause of Injury

Harmful Energy Transfer  
Kinetic, thermal, chemical, etc.

## Primary Surface Causes

Directly cause of the injury event  
Unique hazardous condition(s)  
Individual unsafe behavior(s)  
Controllable or uncontrollable factors  
Events occur close to the injury event  
Failure to perform safety practices, procedures, processes  
Involves the victim, others

## Secondary Surface Causes

Indirectly cause the injury event  
Specific hazardous condition(s)  
Individual unsafe behavior(s)  
Controllable and uncontrollable factors  
Events occur distant from the injury event  
Failure to perform safety practices, procedures, processes  
Co-workers, supervisors, anytime, anywhere

## Implementation Root Causes

Common conditions and behaviors  
Inadequate implementation of safety policies, programs, plans  
Inadequate design of processes, procedures  
Pre-exist surface causes  
Controllable  
Middle management, anytime, anywhere

## System Design Root Causes

Inadequate design of safety system policies, programs, plans  
Pre-exist all other causes  
Controllable  
CEO, top management, anytime, anywhere

## Environmental Causes

Government regulation  
Physical resources  
Human resources  
Capital  
Society

## APPENDIX 7: HEPATITIS B VACCINATION

**For those WANTING the Hepatitis B Vaccination** (following wording is OSHA required):

I understand that the vaccine should not be given to anyone that is immuno-compromised, allergic to yeast or any other component of the vaccine, or to pregnant women or nursing mothers unless clearly necessary. Relative contraindications include any serious active infection, severely compromised cardiopulmonary function, or any person to whom a febrile or systemic reaction could cause a serious health risk. I certify that, to the best of my knowledge, I do not have any of the above listed conditions, have been informed of the potential risks and benefits of the hepatitis B vaccination, and request to receive the vaccination series by signing and dating this form:

\_\_\_\_\_  
Employee Signature

\_\_\_\_\_  
Date

The Hepatitis B vaccination is administered in three applications:

- 1) Initial application;
- 2) Second application—occurs 30 days after the initial application;
- 3) Third application—occurs within 6 months after the initial application.

**For those NOT WANTING the Hepatitis B Vaccination** (following wording is OSHA required):

I understand that due to my occupational exposure to blood or other potentially infectious materials, I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If, in the future, I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me.

I hereby acknowledge my refusal to receive the vaccination at this time by signing and dating this form.

\_\_\_\_\_  
Employee Signature

\_\_\_\_\_  
Date

**OR**

I **DECLINE** the Hepatitis B vaccination at this time because I have previously received the completed Hepatitis B vaccination series, or antibody testing has revealed that I am immune, or the vaccine is contraindicated for medical reasons.

\_\_\_\_\_  
Employee Signature

\_\_\_\_\_  
Date

**All Affected Employees, whether wanting the Hepatitis B vaccine or not, must sign this form.**

# APPENDIX 8: BLOODBORNE PATHOGEN EXPOSURE INCIDENT/ACCIDENT REPORT

*Immediate supervisor should complete this form promptly with employee input.  
Please print clearly and forward to the Administrative Services Officer/Recorder.*

1.	2.
Employee	Supervisor
3.	4.
Date of Incident/Accident	Time

5. \_\_\_\_\_  
Incident/Accident Location and case number (if applicable)

6. Describe the Incident Fully (route of exposure, circumstances; describe type of controls in place at time of incident including engineering controls and personal protective equipment worn; identify unsafe conditions and/or actions; relevant police reports).

7. Describe employee's injury (part of the body/type of injury) \_\_\_\_\_

8. Describe first aid/medical treatment (when and by whom) \_\_\_\_\_

9. When was the accident reported \_\_\_\_\_ To whom? \_\_\_\_\_

If not immediately reported, WHY? \_\_\_\_\_

10. List Names of Witnesses \_\_\_\_\_

11. Is the source individual known?  Yes  No - if so please provide name/address so that a consent for blood testing can be obtained.

Name: \_\_\_\_\_ Address \_\_\_\_\_

12. What corrective action was taken or is planned, to prevent similar accidents from occurring in the future?

13. Referral to medical evaluator has been done? Yes \_\_\_\_\_ No \_\_\_\_\_ Date: \_\_\_\_\_

If not explain:

NOTE: THE OREGON HEALTH DIVISION "SOURCE CONSENT" FORM WILL BE SENT TO THE SOURCE OR HIS/HER MEDICAL PROVIDER TO ATTEMPT TO OBTAIN PERMISSION FOR SOURCE HIV/HBV BLOOD TESTING. THE MEDICAL EVALUATOR HAS BEEN INFORMED AS TO OUR POLICY AND THE OSHA RULES. ALL MEDICAL DATA IS CONFIDENTIAL.

NAME OF INVESTIGATOR: \_\_\_\_\_

TITLE: \_\_\_\_\_ DATE: \_\_\_\_\_

*For additional comments please use additional paper*

# APPENDIX 9: HEALTHCARE PROFESSIONAL'S WRITTEN OPINION

## FOR POST-EXPOSURE EVALUATION AND FOLLOW-UP

**DIRECTIONS:** This form is to be completed by the healthcare professional following an exposure incident and returned to the employer. The employer will maintain a copy of this form and provide a copy to the exposed employee within 15 days.

**The employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials which require further evaluation or treatment.**  Yes  No

Pursuant to OSHA Standard 1910.1030(f)(3)(ii), the source individual shall be asked to consent to having his/her blood collected and tested for HBV, HCV and HIV. (For source individuals that are minors, their legal guardian will be asked to give consent for testing.) The following information must be recorded:

SOURCE NAME: \_\_\_\_\_

BLOOD TAKEN:  Yes  No

DATE TAKEN: \_\_\_\_\_

WRITTEN/ORAL CONSENT GIVEN FOR: HBV TESTING  Yes  No

WRITTEN/ORAL CONSENT GIVEN FOR: HCV TESTING  Yes  No

WRITTEN/ORAL CONSENT GIVEN FOR: HIV TESTING  Yes  No

RESULTS WILL BE MADE AVAILABLE TO: \_\_\_\_\_  
(Employee's Health Care Provider)

\_\_\_\_\_  
NAME OF MEDICAL CENTER AND TREATING PHYSICIAN

\_\_\_\_\_  
HEALTHCARE PROVIDER'S SIGNATURE

\_\_\_\_\_  
DATE

**All other findings or diagnoses shall remain confidential and shall not be included in this written report.**

**Employer:**

City of Pendleton  
Attention Human Resources (Confidential)  
500 SW Dorion Ave.  
Pendleton OR 97801

# APPENDIX 10: EMPLOYEE FORM

Effective Date: \_\_\_\_\_

Employee Name: \_\_\_\_\_

Social Security Number (last 4 digits): \_\_\_\_\_

Date Received: \_\_\_\_\_

**This form must be signed and dated, then delivered to your supervisor, within 10 working days after the effective date.**

I have received my copy of the City of Pendleton's Bloodborne Pathogen Exposure Control Plan.

I have personally reviewed the plan before signing and dating this form below.

I understand that this plan covers all employees who are potentially exposed to blood, body fluids, and other potentially infectious materials, specifically those tasks relating to potential exposure from sanitary sewage. Any questions I might have had concerning this plan's implementation have been discussed with my supervisor. Those questions were adequately answered.

I also understand that I am responsible to follow the requirements of these policies and procedures, including all work practice requirements. I also understand that if I do not follow these requirements, I am subject to disciplinary action in accordance with City policy and/or the Collective Bargaining Agreement.

\_\_\_\_\_  
Employee Signature

\_\_\_\_\_  
Date



# APPENDIX 11: PERMIT-REQUIRED CONFINED SPACE FORM (print yellow)

Date/Time Permit Issued: \_\_\_\_\_ Time Permit Expires: \_\_\_\_\_

ENTRY SUPERVISOR: \_\_\_\_\_ (print)

Attendant: \_\_\_\_\_ (print) Attendant Initials: \_\_\_\_\_

*Note: Have Attendant(s) initial next to name to indicate they have reviewed this form prior to entry.*

Entrant: \_\_\_\_\_ (print) Entrant Initials: \_\_\_\_\_

Entrant: \_\_\_\_\_ (print) Entrant Initials: \_\_\_\_\_

*Note: Have Entrant(s) initial next to name to indicate they have reviewed this form prior to entry.*

**TO BE COMPLETED BY ENTRY SUPERVISOR:**

LOCATION OF SPACE: \_\_\_\_\_

NATURE OF SPACE: \_\_\_\_\_

- Water       Sewer       Storm       Other

What type of work will be performed in the space?

**Notify DISPATCH** by UHF radio. If, for any reason, the radio does not work, contact DISPATCH via phone at one of the following numbers: 541-966-3651; 541-276-7324; or 541-276-0855. Inform them of the confined space permit-required entry, including location, any special hazards, and estimated length of stay.

Request a call-back in \_\_\_\_\_ minutes. Indicate date/time/contact name DISPATCH was notified:

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ DISPATCH Contact Person: \_\_\_\_\_

Upon survey of the confined space to be entered, the following hazards have been identified and the corresponding precautionary measures are to be taken for this confined space.

YES	NO	HAZARD TYPE	REQUIRED PRECAUTIONARY MEASURE
X		All Permit-Required Entries	
		Entry over 5 feet deep	Tripod, harness, lifeline in place for rescue
		Overhead/falling objects	Hard hat for entrant
		Hazardous Atmosphere	Initial & continuous testing; ventilation
		Combustible Atmosphere	Non-Sparking tools and lights
		Sewage	Rubber Gloves & Rubber Boots
		Inadequate lighting	Portable lights    Explosion Proof?    Yes    No
		Flooding	Isolate & Tag Out gates/drains
		Water hazard	Life vests
		Airborne particulates/splashing	Eye protection; possible dust masks
		Traffic Control	Barricades, cones, signing, flagging, railing
		Chemicals	MSDS on site; PPE as required
		Mechanical/electrical hazards	Lockout/Tagout
		Hot Work to be done	Hot Work Permit Required

Has equipment been inspected by the Entry Supervisor?     Yes     No

**Entry Supervisor signature:** \_\_\_\_\_

*(Verifies that procedures and equipment specified are in place & entry can proceed.)*

**COMPLETE THIS SECTION BEFORE ENTRY. (Attendant or Entrant)**

**Atmospheric Testing.** Atmosphere Testing Equipment must be calibrated, in good working order, and used correctly. The equipment will be equipped with audible and visual alarms. The calibration will be checked before each day's use by bump testing or calibrating.

\_\_\_\_\_ Gas monitor calibration/bump test (Attach test sheet): Pass:  Yes  No

Gas Monitor ID # \_\_\_\_\_

<b>Record Results of Atmospheric Test:</b>	<b>Before Venting</b>	<b>After Venting</b>
Time/Tester Initial:		
Oxygen (O <sub>2</sub> ) (19.5% to 23.5%):		
Carbon Monoxide (CO) (below 35 ppm):		
Hydrogen Sulfide (H <sub>2</sub> S) (below 10 ppm):		
Flammables (below 10% LFL):		
Other:		

Actual Time: IN \_\_\_\_\_ OUT \_\_\_\_\_ Total Entry Time: \_\_\_\_\_

**COMPLETE THIS SECTION DURING AND AFTER ENTRY. (Attendant)**

<b>Record Results of Atmospheric Test:</b>	<b>Before Venting</b>	<b>After Venting</b>
Time/Tester Initial:		
Oxygen (O <sub>2</sub> ) (19.5% to 23.5%):		
Carbon Monoxide (CO) (below 35 ppm):		
Hydrogen Sulfide (H <sub>2</sub> S) (below 10 ppm):		
Flammables (below 10% LFL):		
Other:		

Were any new hazards identified in this space?  Yes  No

If YES, list hazards identified. \_\_\_\_\_

Entry Permit Cancelled Before Completion  Job Completed

Permit Reviewed for Completeness: (Attendant signature) \_\_\_\_\_

**This permit will be retained by the attendant who will remain at the confined space entrance during the entire confined space work time and will not leave for any reason during the confined space work.**

**Permit is to be revoked immediately if atmospheric conditions change to unacceptable levels or if any other unanticipated problem arises that could endanger the safety of the entrants.**

**IN CASE OF EMERGENCY**

1. In case of Emergency, first contact DISPATCH with UHF radio. If, for any reason, the radio does not work, call 9-1-1.
2. Activate the emergency rescue winch to remove the entrant from the space.
3. Assess the situation and contact DISPATCH with report of medical services needed.
4. Provide first aid and CPR as needed.
5. If entry rescue is needed, contact DISPATCH and request a "confined space rescue team.

# APPENDIX 12: ALTERNATE ENTRY CONFINED SPACE FORM

*(print green)*

Date: \_\_\_\_\_ Location: \_\_\_\_\_

Purpose of Entry: \_\_\_\_\_

On-Site Entry Supervisor (in charge) \_\_\_\_\_(print)

Attendant: \_\_\_\_\_(print name) Attendant Initials: \_\_\_\_\_

Entrant: \_\_\_\_\_ (print name) Entrant Initials: \_\_\_\_\_

Entrant: \_\_\_\_\_ (print name) Entrant Initials: \_\_\_\_\_

**Notify DISPATCH** by UHF radio. If, for any reason, the radio does not work, contact DISPATCH via phone at one of the following numbers: 541-966-3651; 541-276-7324; or 541-276-0855. Inform them of the confined space entry, alternate entry procedures, including location, any special hazards, and estimated length of stay. Request a call-back in \_\_\_\_\_ minutes. Indicate date/time/contact name DISPATCH was notified:

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ DISPATCH Contact Person: \_\_\_\_\_

The following hazards have been identified and the corresponding precautionary measures are to be taken prior to entry into this confined space.

YES	NO	HAZARD TYPE	REQUIRED PRECAUTIONARY MEASURE
		Overhead/falling objects	Hard Hat for Entrant
		Hazardous atmosphere possible	Initial and continuous testing
		Hazardous atmosphere detected	Initial and continuous testing; ventilation
		Traffic Control	Barricades, cones, signing, flagging
		Opening Requires Guarding	Railing

**On-Site Entry Supervisor signature:** \_\_\_\_\_

(Verifies that procedures and equipment specified are in place & entry can proceed.)

\_\_\_\_\_ Gas monitor calibration/bump test (Attach test sheet): Pass:  Yes  No

**Gas Monitor ID #** \_\_\_\_\_

Record results of Atmospheric Tests:

Initial & at least every 15 minutes.

Time/Tester Initials:				
Oxygen (O <sub>2</sub> ):				
Carbon Monoxide (CO):				
Hydrogen Sulfide (H <sub>2</sub> S):				
Flammables:				
Other:				

Were any hazards identified that would require this space to be designated permit-required?

Yes  No

If YES, list hazards. \_\_\_\_\_

Permit review for completeness (Attendant Signature): \_\_\_\_\_

**IN CASE OF EMERGENCY**

- 1) In case of Emergency, contact DISPATCH with UHF radio.** If, for any reason, the radio does not work, **call 9-1-1.**
- 2) Assess the situation.** Provide first aid and CPR as needed.
- 3) Inform DISPATCH** if medical attention is needed or if a confined space rescue team is requested.

# APPENDIX 13: CONFINED SPACE ENTRY HOT WORK PERMIT

*(print in pink)*

**NOTE:** THIS PERMIT IS TO BE USED WITH THE PERMIT-REQUIRED CONFINED SPACE ENTRY PERMIT WHEN ANY HOT WORK IS PLANNED TO BE DONE IN A CONFINED SPACE.

Date/Time Permit Issued: \_\_\_\_\_ Time Permit Expires: \_\_\_\_\_

ENTRY SUPERVISOR: \_\_\_\_\_(print)

\_\_\_\_\_ (sign)

Attendant(s): \_\_\_\_\_

Note: Have Attendant(s) initial next to name to indicate they have reviewed this form prior to entry.

Entrant(s): \_\_\_\_\_

Note: Have Entrant(s) initial next to name to indicate they have reviewed this form prior to entry.

### COMPLETE THIS SECTION BEFORE ENTRY.

LOCATION OF SPACE: \_\_\_\_\_

NATURE OF SPACE: \_\_\_\_\_

Water  Sewer  Storm  Other

What type of work will be performed in the space?

\_\_\_\_\_

What type of **Hot Work** will be performed in the space? (welding, riveting, cutting, burning, or heating)

\_\_\_\_\_

What additional equipment is required?

Fire Extinguisher  Yes  No

Additional ventilation or purging  Yes  No

Temperature control measures  Yes  No

Other: \_\_\_\_\_

What additional personal protective equipment (PPE) is required?

Welding Helmet  Yes  No

Respirator  Yes  No

Protective Clothing  Yes  No

Other: \_\_\_\_\_

Are all potential sources of hazardous energy (electrical, mechanical, thermal, pneumatic, gravity) locked out?

Yes  No

Are fumes adequately purged from space?  Yes  No

Have all special fire hazards been addressed?  Yes  No

## APPENDIX 14: LIST OF POTENTIAL HAZARDS

Confined space entrants may encounter conditions that present a potential for electric shock, entanglement in mechanical equipment, exposure to hazardous atmospheres, chemicals, burns and engulfment by liquids or solids. Knowledge of why the space is being entered and the nature of the work to be performed may assist in determining what types of hazards will be encountered and how to manage them.

All hazards must be identified and either eliminated or controlled prior to entry into the space. However, not all hazards can be completely controlled or removed. Following is a list of the hazards to consider when evaluating a confined space.

### ATMOSPHERIC HAZARDS

Atmospheric hazards are the leading cause of worker deaths in confined space.

#### Oxygen

OSHA has established the safe levels of oxygen in confined spaces to be between 19.5% and 23.5%.

Oxygen deficiency can be caused by:

- Consumption: welding, cutting, decomposition of organic matter, or oxidation (rust)
- Absorption: damp activated carbon
- Displacement: purging with inert gases, introduction of other gases such as carbon monoxide or natural gas

Symptoms of Oxygen deficiency are:

- 15-19% - Loss of muscular coordination; could impede self-rescue
- 12-14% - Rapid breathing and pulse, impaired judgment/coordination
- 10-12% - Further increase in respiration and pulse
- 8-10% - Fainting, nausea, vomiting, blue lips
- 6-8% - With 4-5 minutes of exposure, victim may recover with treatment
  - With 6 minutes of exposure, victim has 50% chance of recovery
  - With 8 minutes of exposure, victim has no chance of recovery
- 0-6% - Coma in 45 seconds or less, then death

Oxygen enriched atmospheres can permit flammable gases and vapors to ignite over a much wider range of concentrations than is possible in ordinary air, and make them faster burning once ignited. Enrichment can be caused by hydrogen peroxide, chlorine, and oxygen cylinders.

#### Combustible Gases

The mixture of fuel and oxygen that will ignite is different for each specific combustible gas. This critical point, defined as the explosive range, is between the LEL (lower explosive limit) or LFL (lower flammable limit) and the UEL (upper explosive limit) or UFL (upper flammable limit). Concentrations below the LEL, which is the lowest concentration of air and fuel at which a gas can ignite, are too lean to burn. Concentrations above the UEL, the highest concentration that can be ignited, are too rich to burn.

For a fire or an explosion to occur, there must be fuel, oxygen, and a source of ignition. OSHA has established the minimum safe level for the presence of flammable contaminants in confined spaces at 10% or less of the LEL. A 100% LEL can occur within seconds resulting in a fire or explosion.

Flammable gases can also be toxic (such as methane in sewer gas) or can displace oxygen resulting in an oxygen deficiency (such as natural gas from a ruptured pipeline).

Some flammable gases include:

- **Methane**: Colorless, odorless gas which is highly flammable and presents an explosion hazard. Methane is not considered to be highly toxic. Being lighter than air, methane vapors will rise.
- **Fuel Oil and Gasoline**: Vapors are heavier than air and will accumulate at lower levels.
- **Natural Gas**: Colorless, odorless, flammable, non-toxic gas which is biologically inert. Because it is odorless, an odorizer is added for early detection, and this material can cause irritation of the eyes and respiratory system. Natural gas is lighter than air and will dissipate upward; if enclosed, it can displace oxygen. The minimum burnable concentration is 4 parts to 100 parts air. The minimum concentration detectable with odorizer is 1 part to 400 parts of air.

### Toxic Gases

Toxic gases can cause severe illness or even death. Most symptoms include headache, confusion, nausea, eye and respiratory irritation, increased pulse and respirations, unconsciousness and death. You may need to take additional protective actions for skin and other exposures if toxic gases are involved.

Some toxic gases include:

- **Hydrogen sulfide**: Colorless, flammable, extremely toxic gas which smells of rotten eggs and is 1.2 times heavier than air. Sense of smell becomes rapidly fatigued and cannot be relied upon to warn of continuous presence of the gas.
  - Time-Weighted Average (TWA): 10 ppm for 8 hours
  - Short Term Exposure Limit (STEL): 15 ppm for 15 minutes
  - IDLH: 100 ppm
  - Symptoms: Irritation of eyes and respiratory system, dizziness, headache, irritability, convulsions, coma, death
  - Source: Present in sewage and decomposing organic matter
- **Carbon Monoxide**: Colorless, odorless, flammable, very toxic gas, which is 1.59 times heavier than air.
  - TWA: 35 ppm for 8 hours per NIOSH and EPA; 25 ppm per ACGIH
  - Ceiling (Do Not Exceed at Any Time): 200 ppm
  - IDLH: 1500 ppm
  - Symptoms: Headache, nausea, weakness, dizziness, confusion, hallucinations, angina, loss of consciousness, death
  - Source: Incomplete combustion
- **Sulfur Dioxide**: Highly toxic, colorless, nonflammable gas which has a characteristic irritating, pungent odor and is 2.3 times heavier than air.
  - TWA: 2 ppm for 8 hours
  - STEL: 5 ppm for 15 minutes
  - IDLH: 100 ppm
  - Symptoms: Irritation of eyes, nose and throat; choking, cough, reflex bronchoconstriction
  - Source: Industrial gas used locally to bleach cherries.
- **Chlorine**: Greenish-yellow, extremely hazardous gas with pungent, irritating odor; 2.5 times heavier than air.

- TWA: 0.5 ppm for 8 hours
- STEL: 1 ppm for 15 minutes
- IDLH: 100 ppm
- Symptoms: Burning of eyes, nose, mouth; cough; choking; nausea; vomiting; dizziness; headache; fainting; death
- Source: Industrial gas used in water and wastewater treatment
- **Carbon Dioxide:** Colorless, odorless, noncombustible gas which is 1.5 times heavier than air and can displace oxygen, causing asphyxiation. It is a by-product of fermentation.

### **Electrical Hazards**

Contact with energized conductors can result in involuntary muscular contractions, deep-seated burns, respiratory paralysis and cardiac arrest. The effect that electricity has on any individual depends on the voltage of the circuit, the resistance of the body, the flow of current through the body, and the circuit path through the body.

Electrical hazards are controlled by:

- Inspecting equipment on a regular basis;
- Substituting pneumatic equipment when possible;
- Ensuring that insulated tools and equipment are used;
- Using properly grounded equipment;
- Using ground-fault circuit interrupters (GFCI); and
- Using the Lockout/Tagout program.

### **Mechanical Hazards**

Mechanical hazards may be present as fixed or portable equipment. The inadvertent start-up of machinery, high pressure air lines, and moving equipment must be stopped, blocked, de-energized, and locked out.

mechanical hazards include piping or items on the floor which could be tripped over, overhanging equipment which could cause head injuries, protruding items which could cause impalement or entanglement, moving equipment with pinch points, and loose or unfixed equipment which could fall and cause crushing injuries.

### **Structural Hazards**

Structural integrity should be considered whenever entry is being made after an earthquake or incident which may have caused shifting of the space and the area around it, such as impact from a vehicle or train. Metal ladder rungs attached to the concrete sides of vaults can rust and deteriorate, causing a serious falling hazard.



### **Engulfment Hazards**

Finely divided solid materials such as sand and soil, as well as liquids, can completely engulf someone in a matter of seconds. Engulfment can cause the victim to be unable to take a breath or expand their lungs, resulting in suffocation or drowning.

Ensure proper trenching and shoring practices are followed. When working on pipelines, block, blind or divert the flow whenever possible. Perform work during low flow and post another person upstream to warn of pending flooding. All pumps and lines which may reasonably cause contaminants to flow into the space shall be disconnected, blinded and locked out, or effectively isolated by other means to prevent development of dangerous air contamination or engulfment. Not all laterals to sewers or storm drains require blocking; however, where experience or knowledge of industrial use indicates there is a reasonable potential for contamination of air or engulfment in a sewer system, then all affected laterals shall be blocked. If entry into the space is required for blocking and/or isolation, the provisions for entry into a permit-required confined space must be implemented.

### **Control of Hazardous Energy**

OSHA defines Control of Hazardous Energy as “a program of energy control procedures and employee training to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, start-up or release of stored energy could occur and cause injury, the machine or equipment shall be isolated and rendered inoperative.” Refer to the Lockout/Tagout Program ([Safety Manual](#), Chapter 11) for detailed procedures.

### **Falls During Entry**

A full-body harness and retrieval line with fall arrest protection should be worn at all times during entry to prevent injury from falls.

### **Working Over Water**

Where the danger of drowning exists, employees must be continuously protected by railings, nets, safety belts or other applicable provisions. Where water enters the confined space at such a rate that it may engulf an entrant even while attached to a retrieval system, the entrant shall be required to wear U.S. Coast Guard approved personal flotation devices of a type that will support an unconscious person’s head above water.

### **Hazards Outside of the Space**

Be aware of hazards external to the space which might affect the attendant as well as the entrant. Working near loose dirt walls after a heavy rain may result in a mudslide. Traffic, loose animals, utilities, wiring, chemical spills or inclement weather will require special precautions. Enter spaces with external hazards as permit-required, regardless of their original classification.

# APPENDIX 15: EMERGENCY RESPONSE CONFINED SPACE ENTRY FORM

*(print blue)*

Date/Time Permit Issued: \_\_\_\_\_ Time Permit Expires: \_\_\_\_\_

ENTRY SUPERVISOR: \_\_\_\_\_ (print)

Attendant: \_\_\_\_\_ (print) Attendant Initials: \_\_\_\_\_

Attendant: \_\_\_\_\_ (print) Attendant Initials: \_\_\_\_\_

Note: Have Attendant (s) initial next to name to indicate they have reviewed this form prior to entry.

Entrant: \_\_\_\_\_ (print) Entrant Initials: \_\_\_\_\_

Entrant: \_\_\_\_\_ (print) Entrant Initials: \_\_\_\_\_

Entrant: \_\_\_\_\_ (print) Entrant Initials: \_\_\_\_\_

Entrant: \_\_\_\_\_ (print) Entrant Initials: \_\_\_\_\_

Note: Have Entrant(s) initial next to name to indicate they have reviewed this form prior to entry.

**TO BE COMPLETED BY ENTRY SUPERVISOR:**

LOCATION OF SPACE: \_\_\_\_\_

NATURE OF SPACE: \_\_\_\_\_

- Water     Sewer     Storm     Other

What type of work will be performed in the space? \_\_\_\_\_

Notify DISPATCH. Inform them of the confined space permit-required entry, including location, any special hazards, and estimated length of stay. Request a call-back in \_\_\_\_\_ minutes. Indicate date/time/contact name DISPATCH was notified:

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ DISPATCH Contact Person: \_\_\_\_\_

Upon survey of the confined space to be entered, the following hazards have been identified and the corresponding precautionary measures are to be taken for this confined space.

YES	NO	HAZARD TYPE	REQUIRED PRECAUTIONARY MEASURE
X		All Permit-Required Entries	
		Entry over 5 feet deep	Tripod, harness, lifeline in place for rescue
		Overhead/falling objects	Hard hat for entrant
		Hazardous Atmosphere	Initial ( <i>top,middle,bottom</i> ) & continuous testing
		Combustible Atmosphere	Non-Sparking tools and lights
		Sewage	Rubber Gloves & Rubber Boots
		Inadequate lighting	Portable lights    Explosion Proof? Yes No
		Flooding	Isolate & Tag Out gates/drains
		Water hazard	Life vests
		Airborne particulates/splashing	Eye protection; possible dust masks
		Traffic Control	Barricades, cones, signing, flagging, railing
		Chemicals	MSDS on site; PPE as required
		Mechanical/electrical hazards	Lockout/Tagout
		Hot Work to be done	Hot Work Permit Required

Has equipment been inspected by the Entry Supervisor?  Yes  No

Entry Supervisor signature: \_\_\_\_\_

(Verifies that procedures and equipment specified are in place & entry can proceed.)

COMPLETE THIS SECTION BEFORE ENTRY. (Attendant or Entrant)

Atmospheric Testing. Atmosphere Testing Equipment must be calibrated, in good working order, and used correctly. The equipment will be equipped with audible and visual alarms. The calibration will be checked before each day's use by bump testing or calibration.

\_\_\_\_\_ Gas monitor calibration/bump test (Attach test sheet): Pass:  Yes  No

Gas Monitor ID # \_\_\_\_\_

Atmospheric testing will be conducted throughout the entire portion of the space to be occupied (top, middle, bottom). The atmosphere should be tested a distance of approximately four feet in the direction of travel of the entrant(s) and to each side.

Record Results of Atmospheric Tests	Before Venting:	After Venting:
Time/Tester Initial:	_____	_____
Oxygen (O <sub>2</sub> ) (19.5% to 23.5%):	_____	_____
Carbon Monoxide (CO) (below 35 ppm):	_____	_____
Hydrogen Sulfide (H <sub>2</sub> S) (below 10 ppm):	_____	_____
Other: _____	_____	_____

Actual Time: IN \_\_\_\_\_ OUT \_\_\_\_\_ Total Entry Time: \_\_\_\_\_

COMPLETE THIS SECTION DURING AND AFTER ENTRY. (Attendant)

Record Periodic Atmospheric Tests: (At least every 15 minutes.)

Time/Tester Initial:			
Oxygen (O <sub>2</sub> ):	_____	_____	_____
Carbon Monoxide (CO):	_____	_____	_____
Hydrogen Sulfide (H <sub>2</sub> S):	_____	_____	_____
Flammables:	_____	_____	_____
Other: _____	_____	_____	_____

Were any new hazards identified in this space?  Yes  No

If YES, list hazards identified. \_\_\_\_\_

Entry Permit Cancelled Before Completion  Job Completed

Permit Reviewed for Completeness: (Attendant signature) \_\_\_\_\_

This permit will be retained by the attendant who will remain at the confined space entrance during the entire confined space work time and will not leave for any reason during the confined space work.

Permit is to be revoked immediately if atmospheric conditions change to unacceptable levels or if any other unanticipated problem arises that could endanger the safety of the entrants.

## APPENDIX 16: CONFINED SPACE FORMS & EQUIPMENT

Table Revised June 2016

Department	Facilities	Parks Shop	Public Works Shop	Resource Recovery Facility
<b>Forms</b>	Main Office	Parks Office	Office Hallway	Headworks Electrical Building
<b>Gas Monitor</b>	Facilities Warehouse (SW 18 <sup>th</sup> & Byers Ave.)	Parks Office	Office Hallway	Headworks Electrical Building
<b>Radio</b>	NONE Use cell phones	Parks Office	Office Hallway	Headworks Electrical Building
<b>Rescue Equipment</b>	Facilities Warehouse (SW 18 <sup>th</sup> & Byers Ave.)	Parks Shop (SE Section of Parks Shop equipment locker, labeled)	Warehouse (marked cabinet)	Headworks Electrical Building
<b>Blower</b>	Facilities Warehouse (SW 18 <sup>th</sup> & Byers Ave.)	Parks Shop (SE Section of Parks Shop equipment locker, labeled)	Warehouse (marked cabinet)	Headworks Electrical Building



## APPENDIX 18: HEALTH HAZARD DEFINITIONS (Mandatory)

Although safety hazards related to the physical characteristics of a chemical can be objectively defined in terms of testing requirements (e.g. flammability), health hazard definitions are less precise and more subjective. Health hazards may cause measurable changes in the body-such as decreased pulmonary function. These changes are generally indicated by the occurrence of signs and symptoms in the exposed employees--such as shortness of breath, a non-measurable, subjective feeling. Employees exposed to such hazards must be apprised of both the change in body function and the signs and symptoms that may occur to signal that change.

The determination of occupational health hazards is complicated by the fact that many of the effects or signs and symptoms occur commonly in non-occupationally exposed populations, so that effects of exposure are difficult to separate from normally occurring illnesses. Occasionally, a substance causes an effect that is rarely seen in the population at large, such as angiosarcomas caused by vinyl chloride exposure, thus making it easier to ascertain that the occupational exposure was the primary causative factor. More often, however, the effects are common, such as lung cancer. The situation is further complicated by the fact that most chemicals have not been adequately tested to determine their health hazard potential, and data do not exist to substantiate these effects.

There have been many attempts to categorize effects and to define them in various ways. Generally, the terms "acute" and "chronic" are used to delineate between effects on the basis of severity or duration. "Acute" effects usually occur rapidly as a result of short-term exposures, and are of short duration. "Chronic" effects generally occur as a result of long-term exposure, and are of long duration.

The acute effects referred to most frequently are those defined by the American National Standards Institute (ANSI) standard for Precautionary Labeling of Hazardous Industrial Chemicals (Z129.1-1982)--irritation, corrosivity, sensitization and lethal dose. Although these are important health effects, they do not adequately cover the considerable range of acute effects which may occur as a result of occupational exposure, such as, for example, narcosis.

Similarly, the term chronic effect is often used to cover only carcinogenicity, teratogenicity, and mutagenicity. These effects are obviously a concern in the workplace, but again, do not adequately cover the area of chronic effects, excluding, for example, blood dyscrasias (such as anemia), chronic bronchitis and liver atrophy.

The goal of defining precisely, in measurable terms, every possible health effect that may occur in the workplace as a result of chemical exposures cannot realistically be accomplished. This does not negate the need for employees to be informed of such effects and protected from them. [Appendix 19](#), which is also mandatory, outlines the principles and procedures of hazardous assessment.

For purposes of this section, any chemicals which meet any of the following definitions, as determined by the criteria set forth in [Appendix 19](#) are health hazards:

1. **Carcinogen:** A chemical is considered to be a carcinogen if:
  - a. It has been evaluated by the International Agency for Research on Cancer (IARC), and found to be a carcinogen or potential carcinogen; or
  - b. It is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or,
  - c. It is regulated by OSHA as a carcinogen.
2. **Corrosive:** A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. For example, a chemical is considered to be corrosive if, when tested on the intact skin of albino rabbits by the method described by the U.S. Department of Transportation in Appendix 1 to 49 CFR Part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours. This term shall not refer to action on inanimate surfaces.
3. **Highly toxic:** A chemical falling within any of the following categories:
  - a. A chemical that has a median lethal dose (LD50) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
  - b. A chemical that has a median lethal dose (LD50) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.
  - c. A chemical that has a median lethal concentration (LC50) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.
4. **Irritant:** A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 CFR 1500.41 for four hours exposure or by other appropriate techniques, it results in an empirical score of five or more. A chemical is an eye irritant if so determined under the procedure listed in 16 CFR 1500.42 or other appropriate techniques.
5. **Sensitizer:** A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical.
6. **Toxic:** A chemical falling within any of the following categories:
  - a. A chemical that has a median lethal dose (LD50) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
  - b. A chemical that has a median lethal dose (LD50) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.
  - c. A chemical that has a median lethal concentration (LC50) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.
7. **Target organ effects:** The following is a target organ categorization of effects which may occur, including examples of signs and symptoms and chemicals which have been found to cause such effects. These examples are presented to illustrate the range and diversity of effects and hazards found in the workplace, and the broad scope employers must consider in this area, but are not intended to be all-inclusive.
  - a. **Hepatotoxins:** Chemicals which produce liver damage

- Signs & Symptoms: Jaundice; liver enlargement
  - Chemicals: Carbon tetrachloride; nitrosamines
- b. **Nephrotoxins:** Chemicals which produce kidney damage
- Signs & Symptoms: Edema; proteinuria
  - Chemicals: Halogenated hydrocarbons; uranium
- c. **Neurotoxins:** Chemicals which produce their primary toxic effects on the nervous system
- Signs & Symptoms: Narcosis; behavioral changes; decrease in motor functions
  - Chemicals: Mercury; carbon disulfide
- d. **Agents which act on the blood or hematopoietic system:** Decrease hemoglobin function; deprive the body tissues of oxygen
- Signs & Symptoms: Cyanosis; loss of consciousness
  - Chemicals: Carbon monoxide; cyanides
- e. **Agents which damage the lung:** Chemicals which irritate or damage the pulmonary tissue
- Signs & Symptoms: Cough; tightness in chest; shortness of breath
  - Chemicals: Silica; asbestos
- f. **Reproductive toxins:** Chemicals which affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis)
- Signs & Symptoms: Birth defects; sterility
  - Chemicals: Lead; DBCP
- g. **Cutaneous hazards:** Chemicals which affect the dermal layer of the body
- Signs & Symptoms: Defatting of the skin; rashes; irritation
  - Chemicals: Ketones; chlorinated compounds
- h. **Eye hazards:** Chemicals which affect the eye or visual capacity
- Signs & Symptoms: Conjunctivitis; corneal damage
  - Chemicals: Organic solvents; acids

Stat. Auth: ORS 654.025(2) and 656.726(3)  
Hist: OR-OSHA Admin. Order 12-1993, f. 8/20/93, ef. 11/1/93.  
OR-OSHA Admin. Order 4-1994, f. 8/4/94



## APPENDIX 19: HAZARD DETERMINATION (Mandatory)

The quality of a hazard communication program is largely dependent upon the adequacy and accuracy of the hazard determination. The hazard determination requirement of this standard is performance-oriented. Chemical manufacturers, importers, and employers evaluating chemicals are not required to follow any specific methods for determining hazards, but they must be able to demonstrate that they have adequately ascertained the hazards of the chemicals produced or imported in accordance with the criteria set forth in this Appendix.

Hazard evaluation is a process which relies heavily on the professional judgment of the evaluator, particularly in the area of chronic hazards. The performance-orientation of the hazard determination does not diminish the duty of the chemical manufacturer, importer or employer to conduct a thorough evaluation, examining all relevant data and producing a scientifically defensible evaluation. For purposes of this standard, the following criteria shall be used in making hazard determinations that meet the requirements of this standard.

1. **Carcinogenicity:** As described in paragraph (d)(4) and [Appendix 18](#) of this section, a determination by the National Toxicology Program, the International Agency for Research on Cancer, or OSHA that a chemical is a carcinogen or potential carcinogen will be considered conclusive evidence for purposes of this section.
2. **Human data:** Where available, epidemiological studies and case reports of adverse health effects shall be considered in the evaluation.
3. **Animal data:** Human evidence of health effects in exposed populations is generally not available for the majority of chemicals produced or used in the workplace. Therefore, the available results of toxicological testing in animal populations shall be used to predict the health effects that may be experienced by exposed workers. In particular, the definitions of certain acute hazards refer to specific animal testing results (see Appendix 18).
4. **Adequacy and reporting of data:** The results of any studies which are designed and conducted according to established scientific principles, and which report statistically significant conclusions regarding the health effects of a chemical, shall be a sufficient basis for a hazard determination and reported on any material safety data sheet. The chemical manufacturer, importer, or employer may also report the results of other scientifically valid studies which tend to refute the findings of hazard.

Stat. Auth: ORS 654.025(2) and 656.726(3)

Hist: OR-OSHA Admin. Order 12-1993, f. 8/20/93, ef. 11/1/93.

OR-OSHA Admin. Order 4-1994, f. 8/4/94.

## APPENDIX 20: DEFINITION OF “TRADE SECRET” (Mandatory)

The following is a reprint of the Restatement of Torts section 757, comment b (1939):

1. **Definition of trade secret.** A trade secret may consist of any formula, pattern, device or compilation of information which is used in one's business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it. It may be a formula for a chemical compound, a process of manufacturing, treating or preserving materials, a pattern for a machine or other device, or a list of customers. It differs from other secret information in a business (see 759 of the Restatement of Torts which is not included in this Appendix) in that it is not simply information as to single or ephemeral events in the conduct of the business, as, for example, the amount or other terms of a secret bid for a contract or the salary of certain employees, or the security investments made or contemplated, or the date fixed for the announcement of a new policy or for bringing out a new model or the like. A trade secret is a process or device for continuous use in the operations of the business. Generally, it relates to the production of goods, as, for example, a machine or formula for the production of an article. It may, however, relate to the sale of goods or to other operations in the business, such as a code for determining discounts, rebates or other concessions in a price list or catalogue, or a list of specialized customers, or a method of bookkeeping or other office management.
2. **Secrecy.** The subject matter of a trade secret must be secret. Matters of public knowledge or of general knowledge in an industry cannot be appropriated by one as his secret. Matters which are completely disclosed by the goods which one markets cannot be his secret. Substantially, a trade secret is known only in the particular business in which it is used. It is not requisite that only the proprietor of the business know it. He may, without losing his protection, communicate it to employees involved in its use. He may likewise communicate it to others pledged to secrecy. Others may also know of it independently, as, for example, when they have discovered the process or formula by independent invention and are keeping it secret. Nevertheless, a substantial element of secrecy must exist, so that, except by the use of improper means, there would be difficulty in acquiring the information. An exact definition of a trade secret is not possible. Some factors to be considered in determining whether given information is one's trade secret are: (1) The extent to which the information is known outside of his business; (2) the extent to which it is known by employees and others involved in his business; (3) the extent of measures taken by him to guard the secrecy of the information; (4) the value of the information to him and his competitors; (5) the amount of effort or money expended by him in developing the information; (6) the ease or difficulty with which the information could be properly acquired or duplicated by others.
3. **Novelty and prior art.** A trade secret may be a device or process which is patentable; but it need not be **that**. It may be a device or process which is clearly anticipated in the prior art or one which is merely a mechanical improvement that a good mechanic can make. Novelty and invention are not requisite for a trade secret as they are for patentability. These requirements are essential to patentability because a patent protects against unlicensed use of the patented device or process even by one who discovers it properly through independent research. The patent monopoly is a reward to the inventor. But such is not the case with a trade secret. Its protection is not based on a policy of rewarding or otherwise encouraging the development of secret processes or devices. The protection is merely against breach of faith and reprehensible means of learning another's secret. For this limited protection it is not appropriate to require also the kind of novelty and invention which is a requisite of patentability. The nature of the secret is, however, an important factor in determining the kind of relief that is appropriate against one who is subject to liability under the rule stated in this section. Thus, if the secret consists of a device or process which is a novel invention, one who acquires the secret wrongfully is ordinarily enjoined from further use of it and is required to account for the profits derived from his past use. If, on the other hand, the secret consists of mechanical improvements that a good mechanic can make without resort to the secret, the wrongdoer's liability may be limited to damages, and an injunction against future use of the improvements made with the aid of the secret may be inappropriate.

# APPENDIX 21: LOCKOUT TAGOUT PERIODIC AUDIT FORM

To be completed by the Supervisor or Authorized Employee at least annually.

## PERIODIC LOCK-OUT INSPECTION

Inspector: \_\_\_\_\_ Date of Inspection: \_\_\_\_\_

Authorized Employee: \_\_\_\_\_

Inspection Location/Machine or Equipment: \_\_\_\_\_

### Questions to ask Authorized Employee before beginning lockout/tagout

Have you had lockout/tagout training?  Yes  No

Do you fully understand your lockout/tagout responsibilities?  Yes  No

### Inspection of lockout/tagout procedure

Locks/Tags: Describe the type used and adequacy:

---

---

List type(s) of hazardous energy sources to be isolated:

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Was adequate notification given to affected employees?  Yes  No

Was equipment tested after lock or tag was applied?  Yes  No

Were all procedures followed?  Yes  No

Were affected employees notified before restart?  Yes  No

Were locks/tags removed?  Yes  No

Comments/Corrections/Changes:

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## APPENDIX 23: NOISE EXPOSURE COMPUTATION

### COMPUTATION OF EMPLOYEE NOISE DOSE & TWA

1. Noise dose, D, is computed using Table B-1 as follows:

- a. When the sound level, L, is constant over the entire work shift, the noise dose, D, in percent, is given by:  $D = 100 C/T$  where C is the total length of the work day, in hours, and T is the permissible time duration corresponding to the A-weighted sound level, L, in decibels (dB). To find T, use Table B-1. For values outside the range of Table B-1, use the formula shown as a footnote to that table.

D = noise dose in percent

C = total time of exposure at the exposure level

L = A-weighted sound level in decibels (dB)

T = Permissible time of exposure in hours

**Example 1:** Workday consists of 7 hours exposure to a constant level of 95 dB.

$D = 100 C/T$

C = 7 hrs

L = 95 dB

Utilize Table B-1 to find L in the first column; the corresponding T value is 4 hours.

Therefore, T = 4 hrs

$D = 100 (7/4)$

D = 175 %.

To convert from Dose to TWA, use Table B-2. Find D=175% in the first column; the corresponding TWA is 94.0 dB.

- b. When the work shift noise exposure is composed of two or more periods of noise at different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions:

$C_1/T_1 + C_2/T_2 + \dots + C_n/T_n$  exceeds unity (one), then, the mixed exposure should be considered to exceed the limit value. The total noise dose over the workday is given by:

$$D \text{ (dose)} = 100 (C_1/T_1 + C_2/T_2 + \dots + C_n/T_n),$$

D = noise dose in percent

$C_n$  = total time of exposure at the specific exposure level

L = A-weighted sound level in decibels (dB)

$T_n$  = Permissible time of exposure in hours, from Table B-1

**Example 2:** Workday consists of:

1 hour at 95 dB  
 2 hours at 90 dB  
 4 hours at 85 dB

$$D (\text{dose}) = 100 (C_1/T_1 + C_2/T_2 + \dots + C_n/T_n)$$

$$C_1 = 1 \text{ hr}$$

$$L_1 = 95 \text{ dB}$$

$$T_1 = 4 \text{ hrs}$$

$$C_2 = 2 \text{ hrs}$$

$$L_2 = 90 \text{ dB}$$

$$T_2 = 8 \text{ hrs}$$

$$C_3 = 4 \text{ hrs}$$

$$L_3 = 85 \text{ dB}$$

$$T_3 = 16 \text{ hrs}$$

$$D = 100 (1/4 + 2/8 + 4/16)$$

$$D = 75\%$$

To convert from Dose to TWA, use Table B-2. Find D=75% in the first column; the corresponding TWA is 87.9 dB.

**Table B-1**

A-weighted sound level L (decibel)	Permissible time T (hours)	A-weighted sound level L (decibel)	Permissible time T (hours)	A-weighted sound level L (decibel)	Permissible time T (hours)
80	32	97	3.0	114	0.29
81	27.9	98	2.6	115	0.25
82	24.3	99	2.3	116	0.22
83	21.1	100	2	117	0.19
84	18.4	101	1.7	118	0.16
85	16	102	1.5	119	0.14
86	13.9	103	1.3	120	0.125
87	12.1	104	1.1	121	0.11
88	10.6	105	1	122	0.095
89	9.2	106	0.87	123	0.082
90	8	107	0.76	124	0.072
91	7.0	108	0.66	125	0.063
92	6.1	109	0.57	126	0.054
93	5.3	110	0.5	127	0.047
94	4.6	111	0.44	128	0.041
95	4	112	0.38	129	0.036
96	3.5	113	0.33	130	0.031

In the above table the reference duration, T, is computed by  $T = \frac{8}{2^{(L-90)/5}}$  where L is the measured A-weighted sound level.

### CONVERSION BETWEEN "DOSE" AND "8-HOUR TIME-WEIGHTED AVERAGE" SOUND LEVEL

Compliance with this program is determined by the amount of exposure to noise in the workplace. The amount of such exposure, or Dose, can be calculated, as shown in A above, or measured with an audiodosimeter, which gives a readout directly in terms of Dose. Dose can be converted to an "8-hour time-weighted average sound level," or **TWA**, using Table B-2. For values outside the range of Table B-2, use the formula:  $TWA = 16.61 \times \log_{10}\left(\frac{D}{100}\right) + 90$

**Table B-2**

#### Conversion From Dose, D, in % to "8-Hour Time-Weighted Average Sound Level" (TWA)

Dose (%)	TWA (dB)	Dose (%)	TWA (dB)	Dose (%)	TWA (dB)	Dose (%)	TWA (dB)
10	73.4	104	90.3	260	96.9	640	103.4
15	76.3	105	90.4	270	97.2	650	103.5
20	78.4	106	90.4	280	97.4	660	103.6
25	80.0	107	90.5	290	97.7	670	103.7
30	81.3	108	90.6	300	97.9	680	103.8
35	82.4	109	90.6	310	98.2	690	103.9
40	83.4	110	90.7	320	98.4	700	104.0
45	84.2	111	90.8	330	98.6	710	104.1
50 (Action)	85.0	112	90.8	340	98.8	720	104.2
55	85.7	113	90.9	350	99.0	730	104.3
60	86.3	114	90.9	360	99.2	740	104.4
65	86.9	115	91.1	370	99.4	750	104.5
70	87.4	116	91.1	380	99.6	760	104.6
75	87.9	117	91.1	390	99.8	770	104.7
80	88.4	118	91.2	400	100.0	780	104.8
81	88.5	119	91.3	410	100.2	790	104.9
82	88.6	120	91.3	420	100.4	800	105.0
83	88.7	125	91.6	430	100.5	810	105.1
84	88.8	130	91.9	440	100.7	820	105.2
85	88.8	135	92.2	450	100.8	830	105.3
86	88.9	140	92.4	460	101.0	840	105.4
87	89.0	145	92.7	470	101.2	850	105.4
88	89.1	150	92.9	480	101.3	860	105.5
89	89.2	155	93.2	490	101.5	870	105.6
90 (PEL)	89.2	160	93.4	500	101.6	880	105.7
91	89.3	165	93.6	510	101.8	890	105.8
92	89.4	170	93.8	520	101.9	900	105.8
93	89.5	175	94.0	530	102.0	910	105.9
94	89.6	180	94.2	540	102.2	920	106.0
95	89.6	185	94.4	550	102.3	930	106.1
96	89.7	190	94.6	560	102.4	940	106.2
97	89.8	195	94.8	570	102.6	950	106.2
98	89.9	200	95.0	580	102.7	960	106.3
99	89.9	210	95.4	590	102.8	970	106.4
100	90.0	220	95.7	600	102.9	980	106.5
101	90.1	230	96.0	610	103.0	990	106.5
102	90.1	240	96.3	620	103.2		
103	90.2	250	96.6	630	103.3		

**Note:** Dose (D) of 50% = TWA of 85 dB, which is the Action Level.

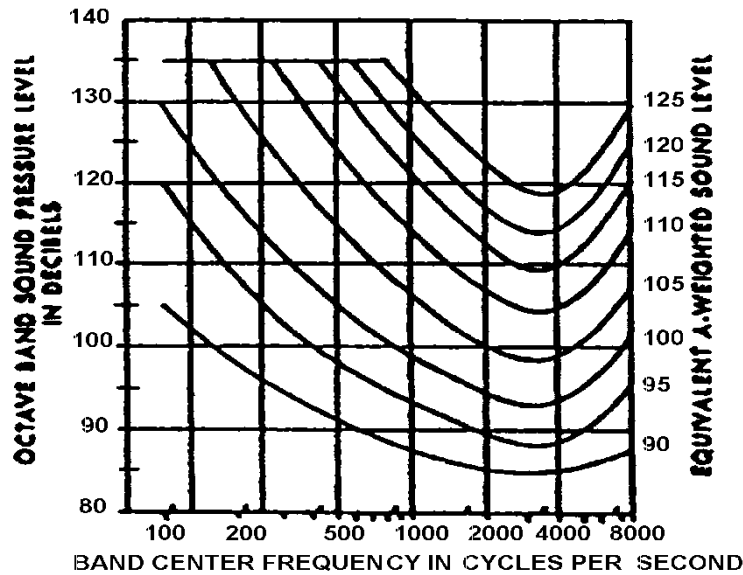
Dose (D) of 90% = TWA of 90 dB, which is the Criterion Level, or Permissible Exposure Level (PEL).

**Note:** Appendix 23 complies with OAR Chapter 437, Appendix 22 to §1910.95: Noise Exposure Computation, and is a mandatory attachment to the Hearing Conservation Policy. Additional examples and information have been added for clarity.



# APPENDIX 24: EQUIVALENT SOUND LEVEL CONTOURS

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**Equivalent sound level contours.** Octave bank sound pressure levels may be converted to the equivalent A-weighted sound level by plotting them on this graph and noting the A-weighted sound level corresponding to the point of highest penetration into the sound level contours. This equivalent A-weighted sound level, which may differ from the actual A-weighted sound level of the noise, is used to determine exposure limits from Table 1.

## APPENDIX 25: AUDIOMETRIC TESTING PROGRAM

1. The employer is required to establish and maintain an **Audiometric Testing Program** and make audiometric testing available to all employees who are exposed at the Action Level.
  - a. Audiometric testing shall be provided at no cost to employees.
  - b. Audiometric tests shall be performed by a licensed or certified audiologist, otolaryngologist, or other physician, or by a technician who is certified by the Council of Accreditation in Occupational Hearing Conservation. A technician who performs audiometric tests must be responsible to an audiologist, otolaryngologist or physician.
  - c. All audiograms obtained pursuant to this section shall meet the requirements of [Appendix 26](#), Audiometric Measuring Instruments.
2. Within six months of an employee's first exposure at or above the action level, the employer shall establish a valid **baseline audiogram** against which subsequent audiograms can be compared.
  - a. Testing to establish a baseline audiogram shall be preceded by at least fourteen (14) hours without exposure to workplace noise. Hearing protectors may be used as a substitute for the requirement that baseline audiograms be preceded by fourteen (14) hours without exposure to workplace noise.
  - b. The employer shall notify employees of the need to avoid high levels of non-occupational noise exposure during the fourteen (14) hour period immediately preceding the audiometric examination.
  - c. An annual audiogram may be substituted for the baseline audiogram when, in the judgment of the audiologist, otolaryngologist or physician who is evaluating the audiogram:
    - i. The standard threshold shift revealed by the audiogram is persistent; or
    - ii. The hearing threshold shown in the annual audiogram indicates significant improvement over the baseline audiogram.
3. At least annually after obtaining the baseline audiogram, the City shall obtain a new, **annual audiogram** for each employee exposed at or above the Action Level.

### 4. Evaluation of Audiogram

- a. Each employee's annual audiogram shall be compared to that employee's baseline audiogram to determine if the audiogram is valid and if a standard threshold shift has occurred. A technician may do this comparison.
- b. A **standard threshold shift (STS)** is a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2000, 3000, and 4000 Hz in either ear. No allowance may be made for presbycusis, which is the gradual decline of hearing function that results from aging.
- c. If the annual audiogram shows that an employee has suffered a STS, the City may obtain a retest within thirty (30) days and consider the results of the retest as the annual audiogram.
- d. The audiologist, otolaryngologist, or physician shall review problem audiograms and shall determine whether there is a need for further evaluation. The City shall provide to the person performing this evaluation the following information:
  - i. A copy of the Hearing Conservation Policy;
  - ii. The baseline audiogram and most recent audiogram of the employee to be evaluated;
  - iii. Measurements of background sound pressure levels in the audiometric test room as required in [Appendix 27](#), Audiometric Test Rooms; and
  - iv. Records of required audiometer calibrations.

### 5. Follow-up Procedures

- a. If a comparison of the annual audiogram to the baseline audiogram indicates a standard threshold shift (STS), the employee shall be informed of this fact in writing, within twenty-one (21) days of the determination.
- b. Unless a physician determines that the STS is not work-related or aggravated by occupational noise exposure, the City shall ensure that the following steps are taken when a STS occurs:
  - i. Employees not using hearing protection devices (HPDs) shall be fitted with HPDs, trained in their use and care, and required to use them.
  - ii. Employees already using HPDs shall be refitted and retrained in the use of HPDs and provided with HPDs offering greater attenuation if necessary.
  - iii. The employee shall be referred for a clinical audiological evaluation or an ontological examination, as appropriate, if additional testing is necessary or if the City suspects that a medical pathology of the ear is caused or aggravated by wearing HPDs.
  - iv. The employee is informed of the need for an ontological examination if a medical pathology of the ear that is unrelated to the use of HPDs is suspected.
- c. If subsequent audiometric testing of an employee whose exposure to noise is less than an 8-hour TWA of 90 decibels indicates that a STS is not persistent, the City:
  - i. Shall inform the employee of the new audiometric interpretation; and
  - ii. May discontinue the required use of HPDs for that employee. However, the City may choose to continue the required use of HPDs for that employee if there is potential for exposure to excessive noise levels.

## 6. Audiometric Test Requirements

- a. Audiometric tests shall be pure tone, air conduction, hearing threshold examinations, with test frequencies including as a minimum 500, 1000, 2000, 3000, 4000, and 6000 Hz. Tests at each frequency shall be taken separately for each ear.
- b. Audiometric tests shall be conducted with audiometers (including microprocessor audiometers) that meet the specifications of, and are maintained and used in accordance with, American National Standard Specification for Audiometers, S3.6-1969.
- c. Pulsed-tone and self-recording audiometers, if used, shall meet the requirements specified in [Appendix 26](#), Audiometric Measuring Instruments.
- d. Audiometric examinations shall be administered in a room meeting the requirements listed in [Appendix 27](#), Audiometric Test Rooms.

## 7. Audiometer Calibration

- a. The functional operation of the audiometer shall be checked before each day's use by testing a person with known, stable hearing thresholds, and by listening to the audiometer's output to make sure that the output is free from distorted or unwanted sounds. Deviations of 10 decibels or greater require an acoustic calibration.
- b. Audiometer calibration shall be checked acoustically at least annually in accordance with [Appendix 28](#), Acoustic Calibration of Audiometers. Test frequencies below 500 Hz and above 6000 Hz may be omitted from this check. Deviations of 15 decibels or greater require an exhaustive calibration.
- c. An exhaustive calibration shall be performed at least every two years in accordance with section 4.1.2; 4.1.3; 4.1.4.3; 4.1; 4.4.1; 4.4.2; 4.4.3; and 4.5 of the American National Standard Specification for Audiometers, S3.6-1969. Test frequencies below 500 Hz and above 6000 Hz may be omitted from this calibration.

## APPENDIX 26: MEASURING INSTRUMENTS

1. In the event that pulsed-tone audiometers are used, they shall have a tone on time of at least 200 milliseconds.
2. Self-recording audiometers shall comply with the following requirements:
  - a. The chart upon which the audiogram is traced shall have lines at positions corresponding to all multiples of 10 dB hearing level within the intensity range spanned by the audiometer. The lines shall be equally spaced and shall be separated by at least  $\frac{1}{4}$  inch. Additional increments are optional. The audiogram pen tracings shall not exceed 2 dB in width.
  - b. It shall be possible to set the stylus manually at the 10-dB increment lines for calibration purposes.
  - c. The slewing rate for the audiometer attenuator shall not be more than 6 dB/sec except that an initial slewing rate greater than 6 dB/sec is permitted at the beginning of each new test frequency, but only until the second subject response.
  - d. The audiometer shall remain at each required test frequency for 30 seconds ( $\pm 3$  seconds). The audiogram shall be clearly marked at each change of frequency and the actual frequency change of the audiometer shall not deviate from the frequency boundaries marked on the audiogram by more than  $\pm 3$  seconds.
  - e. It must be possible at each test frequency to place a horizontal line segment parallel to the time axis on the audiogram, such that the audiometric tracing crosses the line segment at least six times at that test frequency. At each test frequency, the threshold shall be the average of the midpoints of the tracing excursions.

Note: Appendix 26 complies with OAR Chapter 437, Appendix 24 to §1910.95: Audiometric Measuring Instruments, and is a mandatory attachment to the Hearing Conservation Policy.

## APPENDIX 27: AUDIOMETRIC TEST ROOMS

Rooms used for audiometric testing shall not have background sound pressure levels exceeding those in Table F-1 when measured by equipment conforming at least to the Type 2 requirements of American National Standard Specification for Sound Level Meters, S1.4-1971 (R1976), and to the Class II requirements of American National Specification for Octave, Half-Octave, and Third-Octave Band Filter Sets, S1.11-1971 (R1976).

**Table F-1: Maximum Allowable Octave-Band Sound Pressure Levels for Audiometric Test Rooms**

Octave-band center frequency	500	1000	2000	4000	8000
Sound pressure level (dB)	40	40	47	57	62

Note: Appendix 27 complies with OAR Chapter 437, Appendix 25 to §1910.95: Audiometric Measuring Instruments, and is a mandatory attachment to the Hearing Conservation Policy.

## APPENDIX 28: ACOUSTIC CALIBRATION OF AUDIOMETERS

Audiometer calibration shall be checked acoustically, at least annually, according to the procedures described below. The equipment necessary to perform these measurements is a sound level meter, octave-band filter set, and a National Bureau of Standards 9A coupler. In making these measurements, the accuracy of the calibrating equipment shall be sufficient to determine that the audiometer is within the tolerances permitted by American Standard Specification for Audiometers, S3.6-1969.

### Sound Pressure Output Check

1. Place the earphone coupler over the microphone of the sound level meter and place the earphone on the coupler.
2. Set the audiometer's hearing threshold level (HTL) dial to 70 dB.
3. Measure the sound pressure level of the tones at each test frequency from 500 Hz through 6000 Hz for each earphone.
4. At each frequency the readout on the sound level meter should correspond to the levels in Table G-1 or Table G-2, as appropriate, for the type of earphone, in the column entitled "sound level meter reading."

### Linearity Check

1. With the earphone in place, set the frequency to 1000 Hz and the HTL dial on the audiometer to 70 dB.
2. Measure the sound levels in the coupler at each 10-dB decrement from 70 dB to 10 dB noting the sound level meter reading at each setting.
3. For each 10-dB decrement on the audiometer the sound level meter should indicate a corresponding 10 dB decrease.
4. This measurement may be made electrically with a voltmeter connected to the earphone terminals.

### Tolerances

When any of the measured sound levels deviate from the levels in Table G-1 or Table G-2 by  $\pm 3$  dB at any test frequency between 500 and 3000 Hz, 4 dB at 4000 Hz, or 5 dB at 6000 Hz, an exhaustive calibration is advised. An exhaustive calibration is required if the deviations are greater than 15 dB or greater at any test frequency.

**Table G-1**  
**Reference Threshold Levels for Telephonics - TDH-39 Earphones**

Frequency, Hz	Reference threshold level for TDH-39 earphones, dB	Sound level meter reading, dB
500	11.5	81.5
1000	7	77
2000	9	79
3000	10	80
4000	9.5	79.5
6000	15.5	85.5

**Table G-2**  
**Reference Threshold Levels for Telephonics - TDH-49 Earphones**

<b>Frequency, Hz</b>	<b>Reference threshold level for TDH-49 earphones, dB</b>	<b>Sound level meter reading, dB</b>
500	13.5	83.5
1000	7.5	77.5
2000	11	81.0
3000	9.5	79.5
4000	10.5	80.5
6000	13.5	83.5

Note: Appendix 28 complies with OAR Chapter 437, Appendix 26 to §1910.95: Acoustic Calibration of Audiometers, and is a mandatory attachment to the Hearing Conservation Policy.

# APPENDIX 29: ESTIMATING HEARING PROTECTOR ATTENUATION

## APPLICABILITY

Hearing protection devices (HPDs) must attenuate employee exposure to at least a TWA of 90 dB, the Criterion Level. For employees who have experienced a standard threshold shift (STS), hearing protector attenuation must be sufficient to reduce employee exposure to a TWA of 85 dB. One of the following methods must be used to estimate the adequacy of hearing protector attenuation; selection of method is dependent upon the exposure monitoring device(s) used.

### 1. NOISE REDUCING RATING (NRR)

The most convenient method is the Noise Reduction Rating (NRR) developed by the Environmental Protection Agency (EPA). According to EPA regulation, the NRR must be shown on the hearing protector package. The NRR is then related to an individual worker's noise environment in order to assess the adequacy of the hearing protector. Subsection B describes methods for determining if adequate noise reduction has been attained through use of hearing protection.

### 2. NATIONAL INSTITUTE FOR OCCUPATION SAFETY AND HEALTH (NIOSH)

Hearing protector attenuation may be evaluated by using one of the three methods developed by the National Institute for Occupational Safety and Health (NIOSH), which are described in the "List of Personal Hearing Protectors and Attenuation Data," HEW Publication No. 76-120, 1975, pages 21-37. These methods are known as NIOSH methods #1, #2 and #3. The NRR described below is a simplification of NIOSH method #2.

**NOTE: It must be remembered that calculated attenuation values reflect realistic values only to the extent that the protectors are properly fitted and worn.**

## NRR METHODS

When using the Noise Reduction Rating (NRR) to assess the adequacy of a Hearing Protection Device (HPD), use one of the following methods to determine the protection provided by the HPD:

1. When using C-scale (dBC) measurements from either a dosimeter that is capable of C-weighted measurements, a sound level meter set on the C-weighting network, or using area monitoring with a sound level meter set on the C-weighting network:
  - a. Convert the C-weighted reading to Dose and then to TWA using [Appendix 23](#), Noise Exposure Computation.
  - b. Subtract the NRR of the HPD from the TWA to obtain the estimated TWA when using the HPD.
  - c. Example: NRR of the HPD is 21dB and TWA is 91 dB  
 $91 \text{ dB} - 21 \text{ dB} = 70 \text{ dB}$   
 This is adequate protection because it is below 90 dB.
2. When using A-scale (dBA) measurements from either a dosimeter that is capable of A-weighted measurements, a sound level meter set on the A-weighting network, or using area monitoring with a sound level meter set on the A-weighting network:
  - a. Convert the A-weighted reading to Dose and then to TWA using [Appendix 23](#), Noise Exposure Computation.
  - b. Subtract 7 dB from the NRR of the HPD.



- c. Subtract the remainder from the A-weighted TWA to obtain the estimated TWA when using the HPD.

Example: NRR of the HPD is 21 dB and TWA is 91 dB

21 dB - 7 dB = 14 dB

91 dB - 14 dB = 77 dB

*This is adequate protection because it is below 90 dB.*

3. Alternate Method:

- a. Determine the number of decibels (dB) the workplace exceeds the Criterion Level of 90 dB. This is the Noise Reduction Goal (NRG).

Example: Workplace area is 105 dB

105 dB - 90 dB = 15 dB

Therefore, **NRG = 15 dB**

- b. For C-scale (dBC) measurements, compare the NRR of the HPD directly to the NRG. If the NRR is greater than or equal to the NRG, the HPD provides adequate noise reduction.

Example: NRR of the HPD is 21 dB

21 dB > 15 dB (NRG)

*Therefore, the HPD provides adequate noise reduction.*

- c. For A-scale (dBA) measurements, the estimated noise reduction is given by the formula:

$$(NRR - 7) / 2$$

If the calculated noise reduction is greater than or equal to the NRG, the HPD provides adequate noise reduction.

Example: NRR of the HPD is 21 dB

Noise reduction = (21 dB - 7 dB) / 2 = 7 dB

7 dB < 15 dB (NRG)

*Therefore, the HPD does **NOT** provide adequate noise reduction.*

4. Sometimes it is necessary to use ear plugs and ear muffs together to reach the Noise Reduction Goal (NRG). When using ear plugs and ear muffs together, the second HPD adds only 5 dB to the value of the higher-rated HPD.

- a. For C-scale (dBC) measurements:

Example:  $NRR_{\text{plug}} = 30 \text{ dB}$

$NRR_{\text{muff}} = 21 \text{ dB}$

Total noise reduction is 30 dB + 5 dB = 35 dB

- b. For A-scale (dBA) measurements:

Example:  $NRR_{\text{plug}} = 30 \text{ dB}$

$NRR_{\text{muff}} = 21 \text{ dB}$

$(30 \text{ dB} - 7 \text{ dB}) / 2 = 11.5 \text{ dB}$

Total noise reduction is 11.5 dB + 5 dB = 16.5 dB

Note: Attachment H complies with OAR Chapter 437, Appendix 23 to §1910.95: Methods for Estimating the Adequacy of Hearing Protector Attenuation, and is a mandatory attachment to the Hearing Conservation Policy. This attachment has been edited and additional examples have been added for clarity.

# APPENDIX 30: PPE HAZARD ASSESSMENT AND CERTIFICATION

Department: \_\_\_\_\_ Job Task/Work Station: \_\_\_\_\_

## 1. Eye, Face & Body Protection

### Type of Hazard

- Impact  
 Chemical  
 Dust  
 Glare  
 Welding  
 Excessive Heat  
 Other: \_\_\_\_\_

### Type of Protection

- Safety Glasses  
 Safety Sunglasses  
 Goggles  
 Face Shields  
 Welding Helmet  
 Chemical Apron or Lab Coat  
 Other: \_\_\_\_\_

## 2. Respiratory Protection

### Type of Hazard

- Dust  
 Welding  
 Chemical  
 Other: \_\_\_\_\_

### Type of Protection

- Dust Mask  
 Canister Respirator  
 SCBA  
 Other: \_\_\_\_\_

## 3. Head Protection

### Type of Hazard

- Impact  
 Electric Shock or Burn  
 Other: \_\_\_\_\_

### Type of Protection

- Hard Hat with Insert (Class C)  
 Hard Hat for Electrical (Class A or B)  
 Other: \_\_\_\_\_

## 4. Hearing Protection

### Type of Hazard

- Noise at Action Level  
 Excessive, Intermittent Noise  
 Other: \_\_\_\_\_

### Type of Protection

- Ear plugs  
 Ear muffs  
 Other: \_\_\_\_\_

## 5. Foot Protection

### Type of Hazard

- Working in wet conditions  
 Heavy objects drop  
 Other: \_\_\_\_\_

### Type of Protection

- Rubber boots  
 Safety-toe boots or shoes  
 Other: \_\_\_\_\_

### 6. Hand Protection

**Type of Hazard**

- Mechanical Hazard
- Chemical Hazard
- Welding Hazard
- Exposure Hazard (Blood of OPIM)
- Other: \_\_\_\_\_

**Type of Protection**

- Rubber boots
- Safety-toe boots or shoes
- Other: \_\_\_\_\_

### 7. Fall Protection

**Type of Hazard**

- Working > 10 feet above the ground
- Other: \_\_\_\_\_

**Type of Protection**

- Bright shirt(s)
- Safety vest
- Other: \_\_\_\_\_

### 8. Roadside Work Protection

**Type of Hazard**

- Working on or adjacent to streets or roadways
- Flagging
- Other: \_\_\_\_\_

**Type of Protection**

- Bright shirt(s)
- Safety vest
- Other: \_\_\_\_\_

### 9. Other Hazards

**Type of Hazard**

- Working with chain saws
- Working in wastewater, traffic or asphalt
- Working in inclement weather (rain)
- Other: \_\_\_\_\_

**Type of Protection**

- Chain saw chaps
- Orange coveralls
- Rain coat
- Rain pants
- Chemical apron
- Other: \_\_\_\_\_

**PPE Hazard Assessment Completed By:**

\_\_\_\_\_  
Name (Print)

\_\_\_\_\_  
Name (Sign)

\_\_\_\_\_  
Job Title

\_\_\_\_\_  
Date

**PPE Hazard Assessment Reviewed by:**

\_\_\_\_\_  
Employee Name (Print)

\_\_\_\_\_  
Name (Sign)

\_\_\_\_\_  
Date

## APPENDIX 31: FILTER LENSES FOR PROTECTION AGAINST RADIANT ENERGY (1910.133)

Operations	Electrode Side 1/32 in.	Arc Current (amps)	Minimum* Protective Shade
<b>Shielded metal arc welding</b>	Less than 3	Less than 60	7
	3 - 5	60 - 150	8
	5 - 8	160 - 250	10
	More than 8	250 - 550	11
<b>Gas metal arc welding and flux cored arc welding</b>		Less than 60	7
		60 - 160	10
		160 - 250	10
		250 - 500	10
<b>Gas Tungsten arc welding</b>		Less than 50	8
		50 - 150	8
		150 - 500	10
<b>Air carbon Arc cutting</b>	(light)	Less than 500	10
	(heavy)	500 - 1000	11
<b>Plasma arc welding</b>		Less than 20	6
		20 - 100	8
		100 - 400	10
		400 - 800	11
<b>Plasma arc cutting</b>	(light) **	Less than 300	8
	(medium)**	300 - 400	9
	(heavy)**	400 - 800	10
<b>Torch brazing</b>			3
<b>Torch soldering</b>			2
<b>Carbon arc welding</b>			14

Operations	Plate thickness (inches)	Plate thickness (mm)	Minimum* Protective Shade
<b>Gas Welding</b>			
Light	Under 1/8	Under 3.2	4
Medium	1/8 - 1/2	3.2 - 12.7	5
Heavy	1/2	Over 12.7	6
<b>Oxygen Cutting:</b>			
Light	Under 1	Under 25	3
Medium	1 - 6	25 - 150	4
Heavy	Over 6	Over 150	5

\*As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the (spectrum) operation.

\*\*These values apply where the actual arc is clearly seen. Experience has shown that lighter filters may be used when the arc is hidden by the workpiece.

# APPENDIX 32: OSHA RESPIRATOR MEDICAL EVALUATION QUESTIONNAIRE (MANDATORY)

*To the employer:* Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

*To the employee:* **Can you read (circle one): Yes/No**

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

**Part A. Section 1.** (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1. Today's date: \_\_\_\_\_
2. Your name: \_\_\_\_\_
3. Your age (to nearest year): \_\_\_\_\_
4. Sex (circle one): Male/Female
5. Your height: \_\_\_\_\_ ft. \_\_\_\_\_ in.
6. Your weight: \_\_\_\_\_ lbs.
7. Your job title: \_\_\_\_\_
8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code): \_\_\_\_\_
9. The best time to phone you at this number: \_\_\_\_\_
10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes/No
11. Check the type of respirator you will use (you can check more than one category):
  - a. \_\_\_ N, R, or P disposable respirator (filter-mask, non-cartridge type only).
  - b. \_\_\_ Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).
12. Have you worn a respirator (circle one):  Yes  No

13. If "yes," what type(s): \_\_\_\_\_

**Part A. Section 2.** (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please check "yes" or "no").

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month:  Yes  No
2. Have you ever had any of the following conditions?
  - a. Seizures (fits):  Yes  No
  - b. Diabetes (sugar disease):  Yes  No
  - c. Allergic reactions that interfere with your breathing:  Yes  No
  - d. Claustrophobia (fear of closed-in places):  Yes  No
  - e. Trouble smelling odors:  Yes  No
3. Have you ever had any of the following pulmonary or lung problems?
  - a. Asbestosis:  Yes  No
  - b. Asthma:  Yes  No
  - c. Chronic bronchitis:  Yes  No
  - d. Emphysema:  Yes  No
  - e. Pneumonia:  Yes  No
  - f. Tuberculosis:  Yes  No
  - g. Silicosis:  Yes  No
  - h. Pneumothorax (collapsed lung):  Yes  No
  - i. Lung cancer:  Yes  No
  - j. Broken ribs:  Yes  No
  - k. Any chest injuries or surgeries:  Yes  No
  - l. Any other lung problem that you've been told about:  Yes  No
4. Do you currently have any of the following symptoms of pulmonary or lung illness?
  - a. Shortness of breath:  Yes  No
  - b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline:  
 Yes  No

- c. Shortness of breath when walking with other people at an ordinary pace on level ground:  Yes  No
  - d. Have to stop for breath when walking at your own pace on level ground:  Yes  No
  - e. Shortness of breath when washing or dressing yourself:  Yes  No
  - f. Shortness of breath that interferes with your job:  Yes  No
  - g. Coughing that produces phlegm (thick sputum):  Yes  No
  - h. Coughing that wakes you early in the morning:  Yes  No
  - i. Coughing that occurs mostly when you are lying down:  Yes  No
  - j. Coughing up blood in the last month:  Yes  No
  - k. Wheezing:  Yes  No
  - l. Wheezing that interferes with your job:  Yes  No
  - m. Chest pain when you breathe deeply:  Yes  No
  - n. Any other symptoms that you think may be related to lung problems:  Yes  No
5. Have you ever had any of the following cardiovascular or heart problems?
- a. Heart attack:  Yes  No
  - b. Stroke:  Yes  No
  - c. Angina:  Yes  No
  - d. Heart failure:  Yes  No
  - e. Swelling in your legs or feet (not caused by walking):  Yes  No
  - f. Heart arrhythmia (heart beating irregularly):  Yes  No
  - g. High blood pressure:  Yes  No
  - h. Any other heart problem that you've been told about:  Yes  No
6. Have you ever had any of the following cardiovascular or heart symptoms?
- a. Frequent pain or tightness in your chest:  Yes  No
  - b. Pain or tightness in your chest during physical activity:  Yes  No
  - c. Pain or tightness in your chest that interferes with your job:  Yes  No
  - d. In the past two years, have you noticed your heart skipping or missing a beat:  Yes  No

e. Heartburn or indigestion that is not related to eating:  Yes  No

f. Any other symptoms that you think may be related to heart or circulation problems:  Yes  No

7. Do you currently take medication for any of the following problems?

a. Breathing or lung problems:  Yes  No

b. Heart trouble:  Yes  No

c. Blood pressure:  Yes  No

d. Seizures (fits):  Yes  No

8. If you've used a respirator, have you ever had any of the following problems? (If you've never used a respirator, check the following space and go to question 9:)

I have never used a respirator: \_\_\_\_\_

a. Eye irritation:  Yes  No

b. Skin allergies or rashes:  Yes  No

c. Anxiety:  Yes  No

d. General weakness or fatigue:  Yes  No

e. Any other problem that interferes with your use of a respirator:  Yes  No

9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: Yes/No

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you ever lost vision in either eye (temporarily or permanently):  Yes  No

11. Do you currently have any of the following vision problems?

a. Wear contact lenses:  Yes  No

b. Wear glasses:  Yes  No

c. Color blind:  Yes  No

d. Any other eye or vision problem:  Yes  No

12. Have you ever had an injury to your ears, including a broken ear drum:  Yes  No

13. Do you currently have any of the following hearing problems?

a. Difficulty hearing:  Yes  No



- b. Wear a hearing aid:  Yes  No
- c. Any other hearing or ear problem:  Yes  No

14. Have you ever had a back injury:  Yes  No

15. Do you currently have any of the following musculoskeletal problems?

- a. Weakness in any of your arms, hands, legs, or feet:  Yes  No
- b. Back pain:  Yes  No
- c. Difficulty fully moving your arms and legs:  Yes  No
- d. Pain or stiffness when you lean forward or backward at the waist:  Yes  No
- e. Difficulty fully moving your head up or down:  Yes  No
- f. Difficulty fully moving your head side to side:  Yes  No
- g. Difficulty bending at your knees:  Yes  No
- h. Difficulty squatting to the ground:  Yes  No
- i. Climbing a flight of stairs or a ladder carrying more than 25 lbs:  Yes  No
- j. Any other muscle or skeletal problem that interferes with using a respirator:  Yes  No

**Part B** Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen:  Yes  No

If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions:  Yes  No

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals:  Yes  No

If "yes," name the chemicals if you know them:

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3. Have you ever worked with any of the materials, or under any of the conditions, listed below:

- a. Asbestos:  Yes  No

- b. Silica (e.g., in sandblasting):  Yes  No
- c. Tungsten/cobalt (e.g., grinding or welding this material):  Yes  No
- d. Beryllium:  Yes  No
- e. Aluminum:  Yes  No
- f. Coal (for example, mining):  Yes  No
- g. Iron:  Yes  No
- h. Tin:  Yes  No
- i. Dusty environments:  Yes  No
- j. Any other hazardous exposures:  Yes  No

If "yes," describe these exposures: \_\_\_\_\_

- 4. List any second jobs or side businesses you have: \_\_\_\_\_
- 5. List your previous occupations: \_\_\_\_\_
- 6. List your current and previous hobbies: \_\_\_\_\_
- 7. Have you been in the military services?  Yes  No

If "yes," were you exposed to biological or chemical agents (either in training or combat):  
 Yes  No

- 8. Have you ever worked on a HAZMAT team?  Yes  No
- 9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications):  Yes  No

If "yes," name the medications if you know them: \_\_\_\_\_

- 10. Will you be using any of the following items with your respirator(s)?
  - a. HEPA Filters:  Yes  No
  - b. Canisters (for example, gas masks):  Yes  No
  - c. Cartridges:  Yes  No
- 11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:
  - a. Escape only (no rescue):  Yes  No

- b. Emergency rescue only:  Yes  No
- c. Less than 5 hours per week:  Yes  No
- d. Less than 2 hours per day:  Yes  No
- e. 2 to 4 hours per day:  Yes  No
- f. Over 4 hours per day:  Yes  No

12. During the period you are using the respirator(s), is your work effort:

- a. Light (less than 200 kcal per hour):  Yes  No

If "yes," how long does this period last during the average shift: \_\_\_\_\_ hrs. \_\_\_\_\_ mins.  
Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.

- b. Moderate (200 to 350 kcal per hour):  Yes  No

If "yes," how long does this period last during the average shift: \_\_\_\_\_ hrs. \_\_\_\_\_ mins.  
Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

- c. Heavy (above 350 kcal per hour):  Yes  No

If "yes," how long does this period last during the average shift: \_\_\_\_\_ hrs. \_\_\_\_\_ mins.  
Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator:  Yes  No

If "yes," describe this protective clothing and/or equipment: \_\_\_\_\_

14. Will you be working under hot conditions (temperature exceeding 77° F):  Yes  No

15. Will you be working under humid conditions:  Yes  No

16. Describe the work you'll be doing while you're using your respirator(s):

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17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases):

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18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):

a. Name of the first toxic substance: \_\_\_\_\_

b. Estimated maximum exposure level per shift: \_\_\_\_\_

c. Duration of exposure per shift: \_\_\_\_\_

d. Name of the second toxic substance: \_\_\_\_\_

e. Estimated maximum exposure level per shift: \_\_\_\_\_

f. Duration of exposure per shift: \_\_\_\_\_

g. Name of the third toxic substance: \_\_\_\_\_

h. Estimated maximum exposure level per shift: \_\_\_\_\_

i. Duration of exposure per shift: \_\_\_\_\_

j. The name of any other toxic substances that you'll be exposed to while using your respirator:

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19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security):

# APPENDIX 33: FIT TEST PROCEDURES (MANDATORY)

## Part I. OSHA-Accepted Fit Test Protocols

### A. Fit Testing Procedures - General Requirements

The employer shall conduct fit testing using the following procedures. The requirements in this appendix apply to all OSHA-accepted fit test methods, both QLFT and QNFT.

1. The test subject shall be allowed to pick the most acceptable respirator from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.
2. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, because it is only a review.
3. The test subject shall be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.
4. The test subject shall be instructed to hold each chosen facepiece up to the face and eliminate those that obviously do not give an acceptable fit.
5. The more acceptable facepieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in the following item A.6. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.
6. Assessment of comfort shall include a review of the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:
  - a. Position of the mask on the nose
  - b. Room for eye protection
  - c. Room to talk
  - d. Position of mask on face and cheeks
7. The following criteria shall be used to help determine the adequacy of the respirator fit:
  - a. Chin properly placed;
  - b. Adequate strap tension, not overly tightened;
  - c. Fit across nose bridge;
  - d. Respirator of proper size to span distance from nose to chin;
  - e. Tendency of respirator to slip;
  - f. Self-observation in mirror to evaluate fit and respirator position.
8. The test subject shall conduct a user seal check, either the negative and positive pressure seal checks described in [Appendix 34](#) of this section or those recommended by the respirator manufacturer which provide equivalent protection to the procedures in Appendix 34. Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. Another facepiece shall be selected and retested if the test subject fails the user seal check tests.
9. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.

10. If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing her or his duties.
11. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be retested.
12. Exercise regimen. Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.
13. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with respirator fit.
14. Test Exercises.
  - a. Employers must perform the following test exercises for all fit testing methods prescribed in this appendix, except for the CNP quantitative fit testing protocol and the CNP REDON quantitative fit testing protocol. For these two protocols, employers must ensure that the test subjects (i.e., employees) perform the exercise procedure specified in Part I.C.4(b) of this appendix for the CNP quantitative fit testing protocol, or the exercise procedure described in Part I.C.5(b) of this appendix for the CNP REDON quantitative fit-testing protocol. For the remaining fit testing methods, employers must ensure that employees perform the test exercises in the appropriate test environment in the following manner:
    - i. Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.
    - ii. Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.
    - iii. Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.
    - iv. Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).
    - v. Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.

### **Rainbow Passage**

*When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.*

- vi. Grimace. The test subject shall grimace by smiling or frowning. (This applies only to QNFT testing; it is not performed for QLFT)
- vii. Bending over. The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.
- viii. Normal breathing. Same as exercise (1).

Each test exercise shall be performed for one minute except for the grimace exercise which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

## B. Qualitative Fit Test (QLFT) Protocols

### 1. General

- a. The employer shall ensure that persons administering QLFT are able to prepare test solutions, calibrate equipment and perform tests properly, recognize invalid tests, and ensure that test equipment is in proper working order.
- b. The employer shall ensure that QLFT equipment is kept clean and well maintained so as to operate within the parameters for which it was designed.

### 2. Isoamyl Acetate Protocol

Note: This protocol is not appropriate to use for the fit testing of particulate respirators. If used to fit test particulate respirators, the respirator must be equipped with an organic vapor filter.

#### a. Odor Threshold Screening

Odor threshold screening, performed without wearing a respirator, is intended to determine if the individual tested can detect the odor of isoamyl acetate at low levels.

- i. Three 1 liter glass jars with metal lids are required.
- ii. Odor-free water (e.g., distilled or spring water) at approximately 25° C (77° F) shall be used for the solutions.
- iii. The isoamyl acetate (IAA) (also known as isopentyl acetate) stock solution is prepared by adding 1 ml of pure IAA to 800 ml of odor-free water in a 1 liter jar, closing the lid and shaking for 30 seconds. A new solution shall be prepared at least weekly.
- iv. The screening test shall be conducted in a room separate from the room used for actual fit testing. The two rooms shall be well-ventilated to prevent the odor of IAA from becoming evident in the general room air where testing takes place.
- v. The odor test solution is prepared in a second jar by placing 0.4 ml of the stock solution into 500 ml of odor-free water using a clean dropper or pipette. The solution shall be shaken for 30 seconds and allowed to stand for two to three minutes so that the IAA concentration above the liquid may reach equilibrium. This solution shall be used for only one day.
- vi. A test blank shall be prepared in a third jar by adding 500 cc of odor-free water.
- vii. The odor test and test blank jar lids shall be labeled (e.g., i and ii for jar identification). Labels shall be placed on the lids so that they can be peeled off periodically and switched to maintain the integrity of the test.
- viii. The following instruction shall be typed on a card and placed on the table in front of the two test jars (i.e., i and ii): "The purpose of this test is to determine if you can smell banana oil at a low concentration. The two bottles in front of you contain water. One of these bottles also contains a small amount of banana oil. Be sure the covers are on tight, then shake each bottle for two seconds. Unscrew the lid of each bottle, one at a time, and sniff at the mouth of the bottle. Indicate to the test conductor which bottle contains banana oil."
- ix. The mixtures used in the IAA odor detection test shall be prepared in an area separate from where the test is performed, in order to prevent olfactory fatigue in the subject.
- x. If the test subject is unable to correctly identify the jar containing the odor test solution, the

IAA qualitative fit test shall not be performed.

- xi. If the test subject correctly identifies the jar containing the odor test solution, the test subject may proceed to respirator selection and fit testing.

b. Isoamyl Acetate Fit Test

- i. The fit test chamber shall be a clear 55-gallon drum liner suspended inverted over a 2-foot diameter frame so that the top of the chamber is about 6 inches above the test subject's head. If no drum liner is available, a similar chamber shall be constructed using plastic sheeting. The inside top center of the chamber shall have a small hook attached.
- ii. Each respirator used for the fitting and fit testing shall be equipped with organic vapor cartridges or offer protection against organic vapors.
- iii. After selecting, donning, and properly adjusting a respirator, the test subject shall wear it to the fit testing room. This room shall be separate from the room used for odor threshold screening and respirator selection, and shall be well-ventilated, as by an exhaust fan or lab hood, to prevent general room contamination.
- iv. A copy of the test exercises and any prepared text from which the subject is to read shall be taped to the inside of the test chamber.
- v. Upon entering the test chamber, the test subject shall be given a 6-inch by 5-inch piece of paper towel, or other porous, absorbent, single-ply material, folded in half and wetted with 0.75 ml of pure IAA. The test subject shall hang the wet towel on the hook at the top of the chamber. An IAA test swab or ampule may be substituted for the IAA wetted paper towel provided it has been demonstrated that the alternative IAA source will generate an IAA test atmosphere with a concentration equivalent to that generated by the paper towel method.
- vi. Allow two minutes for the IAA test concentration to stabilize before starting the fit test exercises. This would be an appropriate time to talk with the test subject; to explain the fit test, the importance of his/her cooperation, and the purpose for the test exercises; or to demonstrate some of the exercises.
- vii. If at any time during the test, the subject detects the banana-like odor of IAA, the test is failed. The subject shall quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.
- viii. If the test is failed, the subject shall return to the selection room and remove the respirator. The test subject shall repeat the odor sensitivity test, select and put on another respirator, return to the test area and again begin the fit test procedure described in b-i through b-vii above. The process continues until a respirator that fits well has been found. Should the odor sensitivity test be failed, the subject shall wait at least 5 minutes before retesting. Odor sensitivity will usually have returned by this time.
- ix. If the subject passes the test, the efficiency of the test procedure shall be demonstrated by having the subject break the respirator face seal and take a breath before exiting the chamber.
- x. When the test subject leaves the chamber, the subject shall remove the saturated towel and return it to the person conducting the test, so that there is no significant IAA concentration buildup in the chamber during subsequent tests. The used towels shall be kept in a self-sealing plastic bag to keep the test area from being contaminated.

3. Saccharin Solution Aerosol Protocol

The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.



- a. Taste threshold screening. The saccharin taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of saccharin.
- i. During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches in diameter by 14 inches tall with at least the front portion clear and that allows free movements of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts # FT 14 and # FT 15 combined, is adequate.
  - ii. The test enclosure shall have a  $\frac{3}{4}$ -inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.
  - iii. The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his/her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a sweet taste.
  - iv. Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the threshold check solution into the enclosure. The nozzle is directed away from the nose and mouth of the person. This nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.
  - v. The threshold check solution is prepared by dissolving 0.83 gram of sodium saccharin USP in 100 ml of warm water. It can be prepared by putting 1 ml of the fit test solution (see section b-v below) in 100 ml of distilled water.
  - vi. To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then released and allowed to fully expand.
  - vii. Ten squeezes are repeated rapidly and then the test subject is asked whether the saccharin can be tasted. If the test subject reports tasting the sweet taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.
  - viii. If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.
  - ix. If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.
  - x. The test conductor will take note of the number of squeezes required to solicit a taste response.
  - xi. If the saccharin is not tasted after 30 squeezes (step v), the test subject is unable to taste saccharin and may not perform the saccharin fit test.

Note to paragraph 3-a: If the test subject eats or drinks something sweet before the screening test, he/she may be unable to taste the weak saccharin solution.

- xii. If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.
  - xiii. Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.
  - xiv. The nebulizer shall be thoroughly rinsed in water, shaken dry, and refilled at least each morning and afternoon or at least every four hours.
- b. Saccharin solution aerosol fit test procedure.
- i. The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.
  - ii. The fit test uses the same enclosure described in 3-a above.
  - iii. The test subject shall don the enclosure while wearing the respirator selected in section I. A. of this appendix. The respirator shall be properly adjusted and equipped with a particulate filter(s).
  - iv. A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.
  - v. The fit test solution is prepared by adding 83 grams of sodium saccharin to 100 ml of warm water.
  - vi. As before, the test subject shall breathe through the slightly open mouth with tongue extended, and report if he/she tastes the sweet taste of saccharin.
  - vii. The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of saccharin fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test. A minimum of 10 squeezes is required.
  - viii. After generating the aerosol, the test subject shall be instructed to perform the exercises in section I.a.14. of this appendix.
  - ix. Every 30 seconds the aerosol concentration shall be replenished using one half the original number of squeezes used initially (e.g., 5, 10 or 15).
  - x. The test subject shall indicate to the test conductor if at any time during the fit test the taste of saccharin is detected. If the test subject does not report tasting the saccharin, the test is passed.
  - xi. If the taste of saccharin is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).
  - xii. Since the nebulizer has a tendency to clog during use, the test operator must make periodic checks of the nebulizer to ensure that it is not clogged. If clogging is found at the end of the test session, the test is invalid.

#### 4. Bitrex™ (Denatonium Benzoate) Solution Aerosol Qualitative Fit Test Protocol

The Bitrex™ (Denatonium benzoate) solution aerosol QLFT protocol uses the published saccharin test protocol because that protocol is widely accepted. Bitrex is routinely used as a taste aversion agent in household liquids which children should not be drinking and is endorsed by the American Medical Association, the National Safety Council, and the American Association of Poison Control Centers. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

##### a. Taste Threshold Screening.

The Bitrex taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of Bitrex.

- i. During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches (30.5 cm) in diameter by 14 inches (35.6 cm) tall. The front portion of the enclosure shall be clear from the respirator and allow free movement of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts # FT 14 and # FT 15 combined, is adequate.
- ii. The test enclosure shall have a ¾ inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.
- iii. The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his or her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a bitter taste.
- iv. Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the Threshold Check Solution into the enclosure. This Nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.
- v. The Threshold Check Solution is prepared by adding 13.5 milligrams of Bitrex to 100 ml of 5% salt (NaCl) solution in distilled water.
- vi. To produce the aerosol, the nebulizer bulb is firmly squeezed so that the bulb collapses completely, and is then released and allowed to fully expand.
- vii. An initial ten squeezes are repeated rapidly and then the test subject is asked whether the Bitrex can be tasted. If the test subject reports tasting the bitter taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.
- viii. If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.
- ix. If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

- x. The test conductor will take note of the number of squeezes required to solicit a taste response.
  - xi. If the Bitrex is not tasted after 30 squeezes (step x), the test subject is unable to taste Bitrex and may not perform the Bitrex fit test.
  - xii. If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.
  - xiii. Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.
  - xiv. The nebulizer shall be thoroughly rinsed in water, shaken to dry, and refilled at least each morning and afternoon or at least every four hours.
- b. Bitrex Solution Aerosol Fit Test Procedure.
- i. The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.
  - ii. The fit test uses the same enclosure as that described in 4-a above.
  - iii. The test subject shall don the enclosure while wearing the respirator selected according to section I. A. of this appendix. The respirator shall be properly adjusted and equipped with any type particulate filter(s).
  - iv. A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.
  - v. The fit test solution is prepared by adding 337.5 mg of Bitrex to 200 ml of a 5% salt (NaCl) solution in warm water.
  - vi. As before, the test subject shall breathe through his or her slightly open mouth with tongue extended, and be instructed to report if he/she tastes the bitter taste of Bitrex..
  - vii. The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of the fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test.
  - viii. After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. of this appendix.
  - ix. Every 30 seconds the aerosol concentration shall be replenished using one half the number of squeezes used initially (e.g., 5, 10 or 15).
  - x. The test subject shall indicate to the test conductor if at any time during the fit test the taste of Bitrex is detected. If the test subject does not report tasting the Bitrex, the test is passed.

- xi. If the taste of Bitrex is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

#### 5. Irritant Smoke (Stannic Chloride) Protocol

This qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.

##### a. General Requirements and Precautions

- i. The respirator to be tested shall be equipped with high efficiency particulate air (HEPA) or P100 series filter(s).
- ii. Only stannic chloride smoke tubes shall be used for this protocol.
- iii. No form of test enclosure or hood for the test subject shall be used.
- iv. The smoke can be irritating to the eyes, lungs, and nasal passages. The test conductor shall take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Care shall be taken when performing the sensitivity screening checks that determine whether the test subject can detect irritant smoke to use only the minimum amount of smoke necessary to elicit a response from the test subject.
- v. The fit test shall be performed in an area with adequate ventilation to prevent exposure of the person conducting the fit test or the build-up of irritant smoke in the general atmosphere.

##### b. Sensitivity Screening Check

The person to be tested must demonstrate his or her ability to detect a weak concentration of the irritant smoke.

- i. The test operator shall break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute, or an aspirator squeeze bulb. The test operator shall cover the other end of the smoke tube with a short piece of tubing to prevent potential injury from the jagged end of the smoke tube.
- ii. The test operator shall advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep his/her eyes closed while the test is performed.
- iii. The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its irritating properties and to determine if he/she can detect the irritating properties of the smoke. The test operator shall carefully direct a small amount of the irritant smoke in the test subject's direction to determine that he/she can detect it.

##### c. Irritant Smoke Fit Test Procedure

- i. The person being fit tested shall don the respirator without assistance, and perform the required user seal check(s).

- ii. The test subject shall be instructed to keep his/her eyes closed.
- iii. The test operator shall direct the stream of irritant smoke from the smoke tube toward the facepiece area of the test subject, using the low flow pump or the squeeze bulb. The test operator shall begin at least 12 inches from the facepiece and move the smoke stream around the whole perimeter of the mask. The operator shall gradually make two more passes around the perimeter of the mask, moving to within six inches of the respirator.
- iv. If the person being tested has not had an involuntary response and/or detected the irritant smoke, proceed with the test exercises.
- v. The exercises identified in section I.A. 14. of this appendix shall be performed by the test subject while the respirator seal is being continually challenged by the smoke, directed around the perimeter of the respirator at a distance of six inches.
- vi. If the person being fit tested reports detecting the irritant smoke at any time, the test is failed. The person being retested must repeat the entire sensitivity check and fit test procedure.
- vii. Each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation) shall be given a second sensitivity screening check, with the smoke from the same smoke tube used during the fit test, once the respirator has been removed, to determine whether he/she still reacts to the smoke. Failure to evoke a response shall void the fit test.
- viii. If a response is produced during this second sensitivity check, then the fit test is passed.

### **C. Quantitative Fit Test (QNFT) Protocols**

The following quantitative fit testing procedures have been demonstrated to be acceptable: Quantitative fit testing using a non-hazardous test aerosol (such as corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS], or sodium chloride) generated in a test chamber, and employing instrumentation to quantify the fit of the respirator; Quantitative fit testing using ambient aerosol as the test agent and appropriate instrumentation (condensation nuclei counter) to quantify the respirator fit; Quantitative fit testing using controlled negative pressure and appropriate instrumentation to measure the volumetric leak rate of a facepiece to quantify the respirator fit.

#### **1. General**

- a. The employer shall ensure that persons administering QNFT are able to calibrate equipment and perform tests properly, recognize invalid tests, calculate fit factors properly and ensure that test equipment is in proper working order.
- b. The employer shall ensure that QNFT equipment is kept clean, and is maintained and calibrated according to the manufacturer's instructions so as to operate at the parameters for which it was designed.

#### **2. Generated Aerosol Quantitative Fit Testing Protocol**

##### **a. Apparatus**

- i. Instrumentation. Aerosol generation, dilution, and measurement systems using particulates (corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS] or sodium chloride) as test aerosols shall be used for quantitative fit testing.
- ii. Test chamber. The test chamber shall be large enough to permit all test subjects to perform freely all required exercises without disturbing the test agent concentration or the

measurement apparatus. The test chamber shall be equipped and constructed so that the test agent is effectively isolated from the ambient air, yet uniform in concentration throughout the chamber.

- iii. When testing air-purifying respirators, the normal filter or cartridge element shall be replaced with a high efficiency particulate air (HEPA) or P100 series filter supplied by the same manufacturer.
  - iv. The sampling instrument shall be selected so that a computer record or strip chart record may be made of the test showing the rise and fall of the test agent concentration with each inspiration and expiration at fit factors of at least 2,000. Integrators or computers that integrate the amount of test agent penetration leakage into the respirator for each exercise may be used provided a record of the readings is made.
  - v. The combination of substitute air-purifying elements, test agent and test agent concentration shall be such that the test subject is not exposed in excess of an established exposure limit for the test agent at any time during the testing process, based upon the length of the exposure and the exposure limit duration.
  - vi. The sampling port on the test specimen respirator shall be placed and constructed so that no leakage occurs around the port (e.g., where the respirator is probed), a free air flow is allowed into the sampling line at all times, and there is no interference with the fit or performance of the respirator. The in-mask sampling device (probe) shall be designed and used so that the air sample is drawn from the breathing zone of the test subject, midway between the nose and mouth and with the probe extending into the facepiece cavity at least 1/4 inch.
  - vii. The test setup shall permit the person administering the test to observe the test subject inside the chamber during the test.
  - viii. The equipment generating the test atmosphere shall maintain the concentration of test agent constant to within a 10 percent variation for the duration of the test.
  - ix. The time lag (interval between an event and the recording of the event on the strip chart or computer or integrator) shall be kept to a minimum. There shall be a clear association between the occurrence of an event and its being recorded.
  - x. The sampling line tubing for the test chamber atmosphere and for the respirator sampling port shall be of equal diameter and of the same material. The length of the two lines shall be equal.
  - xi. The exhaust flow from the test chamber shall pass through an appropriate filter (i.e., high efficiency particulate filter) before release.
  - xii. When sodium chloride aerosol is used, the relative humidity inside the test chamber shall not exceed 50 percent.
  - xiii. The limitations of instrument detection shall be taken into account when determining the fit factor.
  - xiv. Test respirators shall be maintained in proper working order and be inspected regularly for deficiencies such as cracks or missing valves and gaskets.
- b. Procedural Requirements.
- i. When performing the initial user seal check using a positive or negative pressure check, the sampling line shall be crimped closed in order to avoid air pressure leakage during either of these pressure checks.
  - ii. The use of an abbreviated screening QLFT test is optional. Such a test may be utilized in order to quickly identify poor fitting respirators that passed the positive and/or negative

pressure test and reduce the amount of QNFT time. The use of the CNC QNFT instrument in the count mode is another optional method to obtain a quick estimate of fit and eliminate poor fitting respirators before going on to perform a full QNFT.

- iii. A reasonably stable test agent concentration shall be measured in the test chamber prior to testing. For canopy or shower curtain types of test units, the determination of the test agent's stability may be established after the test subject has entered the test environment.
- iv. Immediately after the subject enters the test chamber, the test agent concentration inside the respirator shall be measured to ensure that the peak penetration does not exceed 5 percent for a half mask or 1 percent for a full facepiece respirator.
- v. A stable test agent concentration shall be obtained prior to the actual start of testing.
- vi. Respirator restraining straps shall not be over-tightened for testing. The straps shall be adjusted by the wearer without assistance from other persons to give a reasonably comfortable fit typical of normal use. The respirator shall not be adjusted once the fit test exercises begin.
- vii. The test shall be terminated whenever any single peak penetration exceeds 5 percent for half masks and 1 percent for full facepiece respirators. The test subject shall be refitted and retested.
- viii. Calculation of fit factors.
  - A. The fit factor shall be determined for the quantitative fit test by taking the ratio of the average chamber concentration to the concentration measured inside the respirator for each test exercise except the grimace exercise.
  - B. The average test chamber concentration shall be calculated as the arithmetic average of the concentration measured before and after each test (i.e., 7 exercises) or the arithmetic average of the concentration measured before and after each exercise or the true average measured continuously during the respirator sample.
  - C. The concentration of the challenge agent inside the respirator shall be determined by one of the following methods:
    1. Average peak penetration method means the method of determining test agent penetration into the respirator utilizing a strip chart recorder, integrator, or computer. The agent penetration is determined by an average of the peak heights on the graph or by computer integration, for each exercise except the grimace exercise. Integrators or computers that calculate the actual test agent penetration into the respirator for each exercise will also be considered to meet the requirements of the average peak penetration method.
    2. Maximum peak penetration method means the method of determining test agent penetration in the respirator as determined by strip chart recordings of the test. The highest peak penetration for a given exercise is taken to be representative of average penetration into the respirator for that exercise.
    3. Integration by calculation of the area under the individual peak for each exercise except the grimace exercise. This includes computerized integration.
    4. The calculation of the overall fit factor using individual exercise fit factors involves first converting the exercise fit factors to penetration values, determining the average, and then converting that result back to a fit factor. This procedure is described in the following equation:



$$\text{Overall Fit Factor} = \frac{\text{Number of exercises}}{1/ff_1 + 1/ff_2 + 1/ff_3 + 1/ff_4 + 1/ff_5 + 1/ff_6 + 1/ff_7 + 1/ff_8}$$

Where  $ff_1$ ,  $ff_2$ ,  $ff_3$ , etc. are the fit factors for exercises 1, 2, 3, etc.

- ix. The test subject shall not be permitted to wear a half mask or quarter facepiece respirator unless a minimum fit factor of 100 is obtained, or a full facepiece respirator unless a minimum fit factor of 500 is obtained.
- x. Filters used for quantitative fit testing shall be replaced whenever increased breathing resistance is encountered, or when the test agent has altered the integrity of the filter media.

### 3. Ambient aerosol condensation nuclei counter (CNC) quantitative fit testing protocol.

The ambient aerosol condensation nuclei counter (CNC) quantitative fit testing (Portacount TM ) protocol quantitatively fit tests respirators with the use of a probe. The probed respirator is only used for quantitative fit tests. A probed respirator has a special sampling device, installed on the respirator, that allows the probe to sample the air from inside the mask. A probed respirator is required for each make, style, model, and size that the employer uses and can be obtained from the respirator manufacturer or distributor. The CNC instrument manufacturer, TSI Inc., also provides probe attachments (TSI sampling adapters) that permit fit testing in an employee's own respirator. A minimum fit factor pass level of at least 100 is necessary for a half-mask respirator and a minimum fit factor pass level of at least 500 is required for a full facepiece negative pressure respirator. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

#### a. Portacount Fit Test Requirements.

- i. Check the respirator to make sure the sampling probe and line are properly attached to the facepiece and that the respirator is fitted with a particulate filter capable of preventing significant penetration by the ambient particles used for the fit test (e.g., NIOSH 42 CFR 84 series 100, series 99, or series 95 particulate filter) per manufacturer's instruction.
- ii. Instruct the person to be tested to don the respirator for five minutes before the fit test starts. This purges the ambient particles trapped inside the respirator and permits the wearer to make certain the respirator is comfortable. This individual shall already have been trained on how to wear the respirator properly.
- iii. Check the following conditions for the adequacy of the respirator fit: Chin properly placed; Adequate strap tension, not overly tightened; Fit across nose bridge; Respirator of proper size to span distance from nose to chin; Tendency of the respirator to slip; Self-observation in a mirror to evaluate fit and respirator position.
- iv. Have the person wearing the respirator do a user seal check. If leakage is detected, determine the cause. If leakage is from a poorly fitting facepiece, try another size of the same model respirator, or another model of respirator.
- v. Follow the manufacturer's instructions for operating the Portacount and proceed with the test.
- vi. The test subject shall be instructed to perform the exercises in section I.A.14. of this appendix.
- vii. After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried.

b. Portacount Test Instrument.

- i. The Portacount will automatically stop and calculate the overall fit factor for the entire set of exercises. The overall fit factor is what counts. The Pass or Fail message will indicate whether or not the test was successful. If the test was a Pass, the fit test is over.
- ii. Since the pass or fail criterion of the Portacount is user programmable, the test operator shall ensure that the pass or fail criterion meet the requirements for minimum respirator performance in this Appendix.
- iii. A record of the test needs to be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style, and size of respirator used; and date tested.

4. Controlled negative pressure (CNP) quantitative fit testing protocol.

The CNP protocol provides an alternative to aerosol fit test methods. The CNP fit test method technology is based on exhausting air from a temporarily sealed respirator facepiece to generate and then maintain a constant negative pressure inside the facepiece. The rate of air exhaust is controlled so that a constant negative pressure is maintained in the respirator during the fit test. The level of pressure is selected to replicate the mean inspiratory pressure that causes leakage into the respirator under normal use conditions. With pressure held constant, air flow out of the respirator is equal to air flow into the respirator. Therefore, measurement of the exhaust stream that is required to hold the pressure in the temporarily sealed respirator constant yields a direct measure of leakage air flow into the respirator. The CNP fit test method measures leak rates through the facepiece as a method for determining the facepiece fit for negative pressure respirators. The CNP instrument manufacturer, Occupational Health Dynamics of Birmingham, Alabama, also provides attachments (sampling manifolds) that replace the filter cartridges to permit fit testing in an employee's own respirator. To perform the test, the test subject closes his or her mouth and holds his/her breath, after which an air pump removes air from the respirator facepiece at a pre-selected constant pressure. The facepiece fit is expressed as the leak rate through the facepiece, expressed as milliliters per minute. The quality and validity of the CNP fit tests are determined by the degree to which the in-mask pressure tracks the test pressure during the system measurement time of approximately five seconds. Instantaneous feedback in the form of a real-time pressure trace of the in-mask pressure is provided and used to determine test validity and quality. A minimum fit factor pass level of 100 is necessary for a half-mask respirator and a minimum fit factor of at least 500 is required for a full facepiece respirator. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

a. CNP Fit Test Requirements.

- i. The instrument shall have a non-adjustable test pressure of 15.0 mm water pressure.
- ii. The CNP system defaults selected for test pressure shall be set at -15 mm of water (-0.58 inches of water) and the modeled inspiratory flow rate shall be 53.8 liters per minute for performing fit tests.

(Note: CNP systems have built-in capability to conduct fit testing that is specific to unique work rate, mask, and gender situations that might apply in a specific workplace. Use of system default values, which were selected to represent respirator wear with medium cartridge resistance at a low-moderate work rate, will allow inter-test comparison of the respirator fit.)

- iii. The individual who conducts the CNP fit testing shall be thoroughly trained to perform the test.

- iv. The respirator filter or cartridge needs to be replaced with the CNP test manifold. The inhalation valve downstream from the manifold either needs to be temporarily removed or propped open.
  - v. The employer must train the test subject to hold his or her breath for at least 10 seconds.
  - vi. The test subject must don the test respirator without any assistance from the test administrator who is conducting the CNP fit test. The respirator must not be adjusted once the fit-test exercises begin. Any adjustment voids the test, and the test subject must repeat the fit test.
  - vii. The QNFT protocol shall be followed according to section I.C.1. of this appendix with an exception for the CNP test exercises.
- b. CNP Test Exercises
- i. Normal breathing. In a normal standing position, without talking, the subject shall breathe normally for 1 minute. After the normal breathing exercise, the subject needs to hold head straight ahead and hold his or her breath for 10 seconds during the test measurement.
  - ii. Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply for 1 minute, being careful not to hyperventilate. After the deep breathing exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during test measurement.
  - iii. Turning head side to side. Standing in place, the subject shall slowly turn his or her head from side to side between the extreme positions on each side for 1 minute. The head shall be held at each extreme momentarily so the subject can inhale at each side. After the turning head side to side exercise, the subject needs to hold head full left and hold his or her breath for 10 seconds during test measurement. Next, the subject needs to hold head full right and hold his or her breath for 10 seconds during test measurement.
  - iv. Moving head up and down. Standing in place, the subject shall slowly move his or her head up and down for 1 minute. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling). After the moving head up and down exercise, the subject shall hold his or her head full up and hold his or her breath for 10 seconds during test measurement. Next, the subject shall hold his or her head full down and hold his or her breath for 10 seconds during test measurement.
  - v. Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song for 1 minute. After the talking exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement.
  - vi. Grimace. The test subject shall grimace by smiling or frowning for 15 seconds.
  - vii. Bending Over. The test subject shall bend at the waist as if he or she were to touch his or her toes for 1 minute. Jogging in place shall be substituted for this exercise in those test environments such as shroud-type QNFT units that prohibit bending at the waist. After the bending over exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement.
  - viii. Normal Breathing. The test subject shall remove and re-don the respirator within a one-minute period. Then, in a normal standing position, without talking, the subject shall breathe normally for 1 minute. After the normal breathing exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement. After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of

the respirator upon completion of the protocol. If it has become unacceptable, another model of a respirator shall be tried.

- c. CNP Test Instrument.
  - i. The test instrument must have an effective audio-warning device, or a visual-warning device in the form of a screen tracing, that indicates when the test subject fails to hold his or her breath during the test. The test must be terminated and restarted from the beginning when the test subject fails to hold his or her breath during the test. The test subject then may be refitted and retested.
  - ii. A record of the test shall be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style and size of respirator used; and date tested.

5. Controlled negative pressure (CNP) REDON quantitative fit testing protocol.

- a. When administering this protocol to test subjects, employers must comply with the requirements specified in paragraphs (a) and (c) of Part I.C.4 of this appendix ("Controlled negative pressure (CNP) quantitative fit testing protocol"), as well as use the test exercises described below in paragraph (b) of this protocol instead of the test exercises specified in paragraph (b) of Part I.C.4 of this appendix.
- b. Employers must ensure that each test subject being fit tested using this protocol follows the exercise and measurement procedures, including the order of administration, described below in Table A-1 of this appendix.
- c. After completing the test exercises, the test administrator must question each test subject regarding the comfort of the respirator. When a test subject states that the respirator is unacceptable, the employer must ensure that the test administrator repeats the protocol using another respirator model.
- d. Employers must determine the overall fit factor for each test subject by calculating the harmonic mean of the fit testing exercises as follows:

**Table A-1. -- CNP REDON Quantitative Fit Testing Protocol**

<b>Exercises<sup>(1)</sup></b>	<b>Exercise Procedure</b>	<b>Measurement Procedure</b>
Facing Forward	Stand and breathe normally, without talking, for 30 seconds.	Face forward, while holding breath for 10 seconds.
Bending Over	Bend at the waist, as if going to touch his or her toes, for 30 seconds.	Face parallel to the floor, while holding breath for 10 seconds.
Head Shaking	For about three seconds, shake head back and forth vigorously several times while shouting.	Face forward, while holding breath for 10 seconds.
REDON 1	Remove the respirator mask, loosen all facepiece straps, and then redon the respirator mask	Face forward, while holding breath for 10 seconds.

REDON 2	Remove the respirator mask, loosen all the facepiece straps, and then redon the respirator mask again.	Face forward, while holding breath for 10 seconds.
---------	--	--

1 Exercises are listed in the order in which they are to be administered.

$$Overall\ Fit\ Factor = \frac{N}{[1/FF_1 + 1/FF_2 \dots + 1/FF_N]}$$

Where:

N = The number of exercises;

FF<sub>1</sub> = The fit factor for the first exercise;

FF<sub>2</sub> = The fit factor for the second exercise; and

FF<sub>N</sub> = The fit factor for the nth exercise.

### Part II. New Fit Test Protocols

1. Any person may submit to OSHA an application for approval of a new fit test protocol. If the application meets the following criteria, OSHA will initiate a rulemaking proceeding under section 6(b)(7) of the OSH Act to determine whether to list the new protocol as an approved protocol in this [Appendix 32](#).
2. The application must include a detailed description of the proposed new fit test protocol. This application must be supported by either:
  - a. A test report prepared by an independent government research laboratory (e.g., Lawrence Livermore National Laboratory, Los Alamos National Laboratory, the National Institute for Standards and Technology) stating that the laboratory has tested the protocol and had found it to be accurate and reliable; or
  - b. An article that has been published in a peer-reviewed industrial hygiene journal describing the protocol and explaining how test data support the protocol's accuracy and reliability.
3. If OSHA determines that additional information is required before the Agency commences a rulemaking proceeding under this section, OSHA will so notify the applicant and afford the applicant the opportunity to submit the supplemental information. Initiation of a rulemaking proceeding will be deferred until OSHA has received and evaluated the supplemental information.

## APPENDIX 34: USER SEAL CHECK PROCEDURES (MANDATORY)

The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on. Either the positive and negative pressure checks listed in this appendix or the respirator manufacturer's recommended user seal check method shall be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

### I. Facepiece Positive and/or Negative Pressure Checks

**A. Positive pressure check.** Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

**B. Negative pressure check.** Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

### II. Manufacturer's Recommended User Seal Check Procedures

The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective.

# APPENDIX 35: RESPIRATOR CLEANING PROCEDURES (MANDATORY)

These procedures are provided for employer use when cleaning respirators. They are general in nature, and the employer as an alternative may use the cleaning recommendations provided by the manufacturer of the respirators used by their employees, provided such procedures are as effective as those listed here in this appendix. Equivalent effectiveness simply means that the procedures used must accomplish the objectives set forth in this appendix, i.e., must ensure that the respirator is properly cleaned and disinfected in a manner that prevents damage to the respirator and does not cause harm to the user.

## I. Procedures for Cleaning Respirators

1. Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
2. Wash components in warm (43° C [110° F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
3. Rinse components thoroughly in clean, warm (43° C [110° F] maximum), preferably running water. Drain.
4. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
  - a. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43° C (110° F); or,
  - b. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43° C (110° F); or,
  - c. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
5. Rinse components thoroughly in clean, warm (43° C [110° F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.
6. Components should be hand-dried with a clean lint-free cloth or air-dried.
7. Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.
8. Test the respirator to ensure that all components work properly.

## APPENDIX 36: USING RESPIRATORS WHEN NOT REQUIRED UNDER THE STANDARD (MANDATORY)

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

*[Source: 63 FR 1152, January 08, 1998; 63 FR 20098, April 23, 1998]*



# APPENDIX 37: EMPLOYEE INTERVIEW

## ESTABLISHING JOB TASKS & ERGONOMIC HAZARDS

Describe a typical day (shift) on your job.

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---

What ergonomic hazards are encountered?

---

---

What PPE, tools and equipment do you use?

---

---

Have you been trained on the proper use of the PPE, tools and equipment?

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---

Do you need additional PPE?

---

---

If lifting or force exertion is required, how often?

---

---

Do you need a lifting or other ergonomic device?

---

---

How much time does it take to complete one job task?

---

---

How long does it take to learn the job task?

---

---

What job tasks are the most physically difficult and why?

---

---

What job tasks or work conditions do you associated with MSD?

---

---

## APPENDIX 38: SAMPLE JOB SAFETY ANALYSIS FORM

The Job Safety Analysis (JSA) provides the basic assessment of safety and health needs for each employee. The information collected by use of a JSA can be used to develop ergonomic solutions.

### Sample Employee Interview/Observational JSA Form

FACTORS	ISSUES	RESPONSE
<b>JOB TASKS</b>	Describe a typical day (shift) on your job.	
<b>SAFETY HAZARDS</b>	Hazards encountered?	
	Need for PPE?	
	Need for lifting aid/ergonomic devices?	
	If lifting or force exertion is required, how often?	
<b>PPE</b>	Types of PPE equipment and safety training provided.	
<b>WORK CYCLE</b>	How much time does it take to complete one inspection?	
	How much does that time vary per shift?	
	How long does it take to learn the job?	
	What tasks are the most difficult & why?	
<b>JOB TASK/ OPERATION</b>	Description of job and the safety practices involved. Use both on-site audit information, interview information from focus group leaders (supervisors or managers), and any written job descriptions.	
<b>HAZARDS</b>	List the hazards associated with the job process.	
<b>SAFETY PROCEDURES</b>	Listing of PPE, ergonomic aids, other safety equipment needed.	
<b>TRAINING REQUIREMENTS</b>	List the type of training provided the inspectors and the safety training required by OR-OSHA.	

# APPENDIX 39: CRANE OPERATOR INSPECTION CHECKLIST

Crane: \_\_\_\_\_ Date: \_\_\_\_\_

Operator: \_\_\_\_\_

## CONDITIONS TO BE CHECKED

Mark each item with a N = No defect, or Y = Yes, a defect

EXPLAIN IF ANY OF THE ANSWERS ARE YES

Y/N	<b>Functional Operating Mechanisms – excessive wear, deterioration of parts, and visual inspection of rigging</b>
	Bearings: Loose, worn
	Brakes: shoe wear
	Bridge: alignment out of true (indicated by screeching or squealing of wheels)
	Bumpers or bridge: loose, missing, improper placement
	Collector shoes or bars: worn, pitted, loose, broken
	Couplings: loose, worn
	Drum: rough edges on cable grooves
	End stops on trolley: loose, missing improper placement
	Gears: lack of lubrication or foreign material in the gear teeth
	Guards: bent, broken, lost
	Hoisting cable: broken wires, kinked, twisted, frayed or cut cables
	Hoisting equipment (Rigging): deformed, defective, cracked or rusted
	Hooks: straightening (note when permanent set of hook is greater than 15% in excess of normal throat opening the hook shall be replaced.)
	Hydraulic system: leakage in lines, tanks, valves or drain pumps
	Lights (if installed) are functional
	Light switch: functioning improperly
	Lubrication: overflowing on rails, dirty cups, or leaking
	Mechanical parts (rivets, covers, etc.) loose
	Overload relay: frequent tripping of power




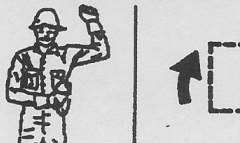
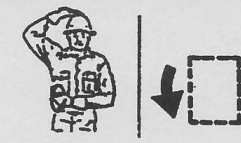



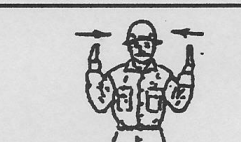
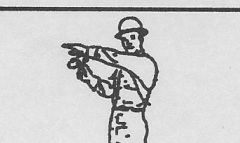
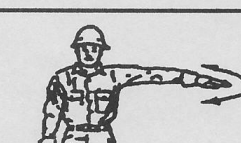
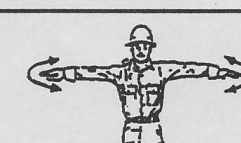
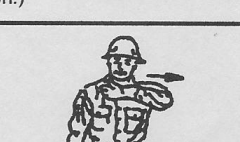


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	Rails (trolley or runway): broken, chipped, cracked
	Wheels: worn (indicated by bumpy riding)
	Electrical control buttons are functioning improperly and clearly marked as to direction of travel

**ADDITIONAL COMMENTS:**

# APPENDIX 40: HAND SIGNALS FOR CONTROLLING EXCAVATORS & BACKHOES

SAE STANDARD J1307 - HAND SIGNALS FOR CONTROLLING EXCAVATORS & BACKHOES	
 <p><b>RAISE LOAD VERTICALLY.</b> With either forearm vertical, forefinger pointing up, move hand in small horizontal circle.</p>	 <p><b>LOWER LOAD VERTICALLY.</b> With either arm extended downward, forefinger pointing down, move hand in small horizontal circle.</p>
 <p><b>MOVE LOAD IN HORIZONTALLY.</b> With either arm extended, hand raised and open toward direction of movement, move hand in direction of required movement.</p>	 <p><b>MOVE LOAD OUT HORIZONTALLY.</b> With either arm extended, hand raised and open toward direction of movement, move hand in direction of required movement.</p>
 <p><b>RAISE BOOM.</b> With either arm extended horizontally, fingers closed, point thumb upward.</p>	 <p><b>LOWER BOOM.</b> With either arm extended horizontally, fingers closed, point thumb downward.</p>
 <p><b>SWING.</b> With either arm extended horizontally, point with forefinger to direction of swing rotation.</p>	 <p><b>SWING.</b> With either arm extended horizontally, point with forefinger to direction of swing rotation.</p>
 <p><b>ARM / DIPPERSTICK INWARD.</b> With both hands clenched, point thumbs inward.</p>	 <p><b>ARM / DIPPERSTICK OUTWARD.</b> With both hands clenched, point thumbs outward.</p>
 <p><b>RETRACT TELESCOPIC BOOM.</b> With both hands clenched, point thumbs inward.</p>	 <p><b>EXTEND TELESCOPIC BOOM.</b> With both hands clenched, point thumbs outward.</p>

 <p><b>CLOSE BUCKET.</b> Hold one hand closed and stationary. Rotate other hand in small vertical circle with forefinger pointing horizontally at closed hand.</p>	 <p><b>OPEN BUCKET.</b> Hold one hand open and stationary. Rotate other hand in small vertical circle with forefinger pointing horizontally at open hand.</p>	 <p><b>TURN.</b> Raise forearm with closed fist indicating inside of turn. Move other fist in vertical circle indicating direction of track or wheel rotation.</p>
 <p><b>TURN.</b> Raise forearm with closed fist indicating inside of turn. Move other fist in vertical circle indicating direction of track or wheel rotation.</p>	 <p><b>COUNTER ROTATE.</b> Place hand on head indicating side or reverse track or wheel rotation. Move other hand in vertical circle indicating forward rotation of other track or wheel.</p>	 <p><b>COUNTER ROTATE.</b> Place hand on head indicating side or reverse track or wheel rotation. Move other hand in vertical circle indicating forward rotation of other track or wheel.</p>
 <p><b>TRAVEL.</b> Move fists in vertical circle about each other in direction of track or wheel rotation.</p>	 <p><b>TRAVEL.</b> Move fists in vertical circle about each other in direction of track or wheel rotation.</p>	 <p><b>THIS FAR TO GO.</b> With hands raised and open inward, move hands laterally, indicating distance to go.</p>
 <p><b>MOVE SLOWLY.</b> Place one hand motionless in front of hand giving motion signal. (Raise load slowly is shown.)</p>	 <p><b>STOP.</b> With either arm extended laterally, hand open downward, move arm back and forth.</p>	 <p><b>EMERGENCY STOP.</b> With both arms extended laterally, hands open downward, wave arms back and forth.</p>
 <p><b>STOP ENGINE.</b> Draw thumb or forefinger across throat.</p>	 <p><b>RETRACT TELESCOPIC ARM/ DIPPERSTICK.</b> With either arm outstretched horizontally in front of body, close fingers and point thumb in direction of required movement.</p>	 <p><b>EXTEND TELESCOPIC ARM/ DIPPERSTICK.</b> With either arm outstretched horizontally in front of body close fingers and point thumb in direction of required movement.</p>

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## APPENDIX 41: SAFETY MANUAL REQUEST CHECKLIST

Project Manager: \_\_\_\_\_ Date: \_\_\_\_\_

Company Name: \_\_\_\_\_

Contractor Name: \_\_\_\_\_

It is the City's goal to provide a safe and healthful work environment for all employees and ensure proper hazard notification to our contractors. Upon request, the Contractor will be provided with the City's Safety Manual and/or portions thereof for review.

	Chapter 1: <i>Safety Responsibilities</i>
	Chapter 2: <i>Self-Insured Loss Prevention Program</i>
	Chapter 3: <i>Recordkeeping</i>
	Chapter 4: <i>Safety &amp; Health Training Program</i>
	Chapter 5: <i>Accident Investigation Procedures</i>
	Chapter 6: <i>Safety Committee Charter</i>
	Chapter 7: <i>Emergency Action, Fire Prevention Plan &amp; First Aid</i>
	Chapter 8: <i>Bloodborne Pathogen Exposure Control Plan</i>
	Chapter 9: <i>Confined Space Entry Plan</i>
	Chapter 10: <i>Hazard Communication Program</i>
	Chapter 11: <i>Hazardous Energy Control Program—Lockout/Tagout</i>
	Chapter 12: <i>Hearing Conservation Program</i>
	Chapter 13: <i>Personal Protective Equipment</i>
	Chapter 14: <i>Respiratory Protection Program</i>
	Chapter 15: <i>Laboratory Safety &amp; Chemical Hygiene Policy &amp; Procedures</i>
	Chapter 16: <i>Asbestos Maintenance Program</i>
	Chapter 17: <i>Lead Compliance Program</i>
	Chapter 18: <i>Ergonomics Program</i>
	Chapter 19: <i>Crane &amp; Derrick Operating Procedures</i>
	Chapter 20: <i>Contractor Safety &amp; Notification Policy</i>
	Chapter 21: <i>Excavation Safety Policy &amp; Procedures</i>

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	Chapter 22: <i>Workplace Violence Program</i>
	Chapter 23: <i>Forklift Safety</i>
	Chapter 24: <i>Fall Protection Plan</i>
	Chapter 25: <i>Welding Fire &amp; Exposure Control</i>
	Chapter 26: <i>Electrical Safety</i>
	Chapter 27: <i>Ladder Safety</i>

By my signature below, I acknowledge that I have received the requested safety materials identified above from the City of Pendleton.

Signature of Contractor or Contractor Representative:

---

Date: \_\_\_\_\_

**Additional notification and/or sign-off letters may be attached.**

**NOTE: This document does not list all potential or existing hazards or rule compliance issues, but is intended to provide overall safety control issues that contractors and their employees are required to follow. This guide does not anticipate all problems nor identify all possible solutions. Each contractor remains responsible for the safety and health of his/her employees and must be vigilant in identifying and correcting hazards and reporting any problems or accidents/near misses to the Project Manager.**



# APPENDIX 42: ASBESTOS ABATEMENT NOTIFICATION

Project Manager: \_\_\_\_\_ Date: \_\_\_\_\_

Company Name: \_\_\_\_\_

Contractor Name: \_\_\_\_\_

## APPLICABLE LEGAL REGULATIONS INCLUDE:

- Federal OSHA, 29 CFR 1926.1101
- Oregon OSHA, OAR 437, Division 2, Subdivision Z, Toxic & Hazardous Substances
- Oregon DEQ, OAR 340 Division 248, Asbestos Requirements
- OSHA Division 3, 1926.58 Construction - Asbestos

The locations of known asbestos or asbestos-containing materials (ACM) have been reviewed with the Project Manager and the list of known locations is listed below. All asbestos removal will meet DEQ and OSHA requirements. City may audit the work operations and can require changes to the procedures if the operations do not meet the DEQ or OSHA requirements.

Location(s) of known asbestos or ACM:

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Signature of Contractor or Contractor Representative:

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Date: \_\_\_\_\_

**If asbestos abatement work is involved, please provide list of contractor employee names that will be on the job and their DEQ Certification Training Number and Date of Certification:**

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# APPENDIX 43: LEAD ABATEMENT NOTIFICATION

PROJECT MANAGER: \_\_\_\_\_

DATE: \_\_\_\_\_

COMPANY NAME: \_\_\_\_\_

CONTRACTOR NAME \_\_\_\_\_

APPLICABLE LEGAL REGULATIONS INCLUDE:

- Federal OSHA 29 CFR 1910.1025**
- Oregon OSHA OAR 437 Division 2, Subdivision Z, Toxic & Hazardous Substances**
- Oregon OSHA OAR 437 Division 3, Subdivision D, Occupational Health & Environmental Controls**

The locations of known lead-containing materials has been reviewed by the Project Manager and are listed below. The Contractor understands that they must follow applicable state and federal standards.

Location(s) of known lead-containing materials: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature of Contractor or Contractor Representative:

\_\_\_\_\_

Date: \_\_\_\_\_

**If lead abatement work is involved, please provide a list of contractor employee names that will be on the job and their DEQ, OSHA and DOT Hazardous Materials Training Level.**

\_\_\_\_\_

\_\_\_\_\_

## APPENDIX 44: ENERGY CONTROL NOTIFICATION

Project Manager: \_\_\_\_\_ Date: \_\_\_\_\_

Company Name: \_\_\_\_\_

Contractor Name: \_\_\_\_\_

The scope of work involving known source(s) of hazardous energy has been reviewed by the Project Manager and is listed below.

KNOWN SOURCE(S) OF HAZARDOUS ENERGY AND THEIR LOCATION:

\_\_\_\_\_  
\_\_\_\_\_

Name of Contractor: \_\_\_\_\_

Signature of Contractor or Contractor Representative:

\_\_\_\_\_

Date: \_\_\_\_\_

# APPENDIX 45: CONFINED SPACE NOTIFICATION

Project Manager: \_\_\_\_\_ Date: \_\_\_\_\_

Company Name: \_\_\_\_\_

Contractor Name: \_\_\_\_\_

## APPLICABLE LEGAL REGULATIONS INCLUDE:

- Federal OSHA 1910.146
- Oregon OSHA, OAR 437, Division 2, Subdivision J, § 1910.146

The location(s) of and special hazards of any known confined space(s) have been reviewed by the Project Manager and are listed below.

LOCATION OF CONFINED SPACE(s):

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The following information outlines specific known hazards and recommended safety precautions. There may be other hazards or conditions created by the Contractor. It is imperative that the contractor follow the OSHA Confined Space rules.

## CHECKLIST OF SPECIFIC KNOWN HAZARDS

### Isolation:

1. Electrical
2. Mechanical
3. Other

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### Hazardous Work:

1. Welding/Burning Open Flame
2. Electrical Work
3. Chemicals

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### Special Requirements:

1. Lock-outs
2. Lines Disconnected
3. Vessel/Tank Purge – Flush & Vent

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- 
- 4. Ventilation \_\_\_\_\_
  - 5. Secure Area \_\_\_\_\_
  - 6. Lighting \_\_\_\_\_
  - 7. Communication \_\_\_\_\_
  - 8. Fire Extinguishers \_\_\_\_\_
  - 9. Emergency Egress Procedures \_\_\_\_\_
  - 10. Other \_\_\_\_\_

**Personal Protective Equipment Needed:**

- 1. Harness & Life Line \_\_\_\_\_
- 2. Respirator \_\_\_\_\_
- 3. Eye Protection \_\_\_\_\_
- 4. Hearing Protection \_\_\_\_\_
- 5. Protective Clothing \_\_\_\_\_

**Atmosphere Tests:**

List any type of air testing that would be necessary \_\_\_\_\_

The scope of the Confined Space work has been reviewed with the Project Manager, as detailed above.

Name of Contractor: \_\_\_\_\_

Signature of Contractor or Contractor Representative:

\_\_\_\_\_

Date: \_\_\_\_\_

# APPENDIX 46: HAZARDOUS CHEMICAL OR ATMOSPHERE NOTIFICATION

Project Manager: \_\_\_\_\_ Date: \_\_\_\_\_

Company Name: \_\_\_\_\_

Contractor Name: \_\_\_\_\_

The locations and types of known hazardous chemicals and/or known hazardous atmosphere(s) has been reviewed by the Project Manager and are listed below.

KNOWN HAZARDOUS CHEMICALS & THEIR LOCATION:

\_\_\_\_\_  
\_\_\_\_\_

KNOWN HAZARDOUS ATMOSPHERE AND ITS LOCATION:

\_\_\_\_\_  
\_\_\_\_\_

Name of Contractor: \_\_\_\_\_

Signature of Contractor or Contractor Representative:

\_\_\_\_\_

Date: \_\_\_\_\_

# APPENDIX 47: HAZARDOUS WASTE NOTIFICATION

Project Manager: \_\_\_\_\_ Date: \_\_\_\_\_

Company Name: \_\_\_\_\_

Contractor Name: \_\_\_\_\_

The locations and types of known hazardous waste that will be collected, transported and disposed of have been reviewed. All appropriate generator documents have been provided and hazardous waste determinations have been done. All OSHA, DEQ/EPA and DOT applicable rules shall be followed by the Contractor and employees. The Project Manager may audit the Contractor's procedures and can require changes if the Contractor is not complying with appropriate hazardous materials-waste regulations.

LOCATION AND TYPE OF HAZARDOUS WASTE:

\_\_\_\_\_  
\_\_\_\_\_

Name of Contractor: \_\_\_\_\_

Signature of Contractor or Contractor Representative:

\_\_\_\_\_

Date: \_\_\_\_\_

**If hazardous waste work is involved, please provide a list of contractor employee names that will be on the job and their DEQ, OSHA and DOT Hazardous Materials Training Level.**

\_\_\_\_\_  
\_\_\_\_\_





Are employees exposed to vehicular traffic wearing safety vests or bright clothing?	Yes	No
Are employees protected from soil or rock falling into excavation	Yes	No
Is soil pile at least 2 feet from excavation edge?	Yes	No
Does equipment operator have a clear view of the trench edge? (If NO, use warning system, such as barricades, hand signals or stop logs.)	Yes	No
Access or Egress: Is the trench 4 feet or more in depth? (If YES, is there a ladder, ramp or other means of access/egress within 25 feet of all employees in the trench?)	Yes	No
If a ladder is used, does it extend 3 feet above the trench wall?	Yes	No
Is a hazardous atmosphere expected or known to exist in a trench over 4 feet deep? (If YES, STOP WORK, monitor for toxic gases, and follow Confined Space Entry procedures)	Yes	No
Is water accumulating in the trench? (If YES, STOP WORK and reevaluate additional equipment needs.)	Yes	No
If protection for water accumulation is used, which type?		
Water removal	Different Protective System	Water Diversion
Harness and life line	Other:	
If trench is <u>less than 5 feet deep</u> , is a protective system needed?	Yes	No
<b>If trench is greater than 5 feet deep, a protective system is required.</b>		
If protection for water accumulation is used, which type?		
None	Trench Shield	Hydraulic Shoring
Sloping	Benching	Other:
For sloping or benching, select angle of repose (H:V):	$\frac{3}{4}:1$	$1:1$ $1 \frac{1}{2} :1$
Is Tab Data for shoring on site?	Yes	No
Is Sheeting needed to protect from raveling and/or sloughing?	Yes	No
Are adjacent structures that might create a hazard to employees removed or supported? (Examples: poles, sidewalks, pavement, structures)	Yes	No
Are walkways needed to cross the trench? (If YES, guardrails must be provided if walkway is 6 feet or more above the lower level)	Yes	No

**IN CASE OF EMERGENCY – DIAL 9-1-1.**

Provide the dispatcher with the following information:

1. What is the location of the emergency?
2. What is the nature of the emergency? (excavation, confined space, entrapment, other)
3. How many people are involved?
4. Are there other special hazards to be considered? (electrical hazard, hazardous atmosphere, potential engulfment, etc.)

# APPENDIX 49: SLOPING AND BENCHING

When surcharge loads from stored material or equipment, operating equipment, or traffic are present, a competent person shall determine the degree to which the actual slope must be reduced below the maximum allowable slope, and shall assure that such reduction is achieved. Surcharge loads from adjacent structures shall be evaluated in accordance with §1926.651(i).

**(4) Configurations.** Configurations of sloping and benching systems shall be in accordance with Figure B-1.

**Table B-1 Maximum Allowable Slopes**

Soil or Rock Type	Maximum Allowable Slopes (H:v) <sup>(1)</sup> for Excavations less than 20 Feet Deep <sup>(3)</sup>
Stable Rock .....	Vertical (90°)
Type A <sup>(2)</sup> .....	3/4: 1 (53°)
Type B .....	1 : 1 (45°)
Type C .....	1 1/2: 1 (34°)

**NOTES:**

1. Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.
2. A short-term maximum allowable slope of 1/2H:1V(63°) is allowed in excavations in Type A soil that are 12 feet (3.67m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67m) in depth shall be 3/4H:1V(53°).
3. Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.

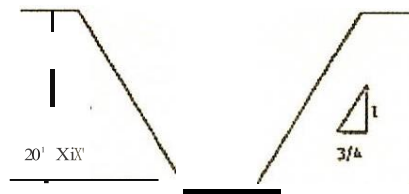
**Figure B-1**

**Slope Configurations**

(All slopes stated below are in the horizontal to vertical ratio)

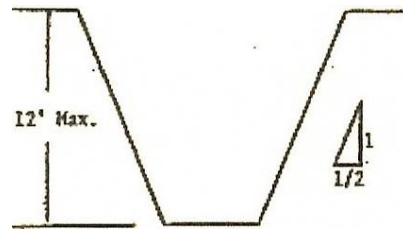
**B-1.1 Excavations made in Type A soil.**

1. All simple slope excavation 20 feet or less in depth shall have a maximum allowable slope of 3/4:1.



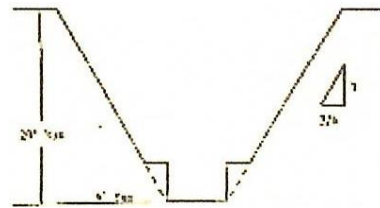
**Simple Slope - General**

Exception: Simple slope excavations which are open 24 hours or less (short term) and which are 12 feet or less in depth shall have a maximum allowable slope of 1/2:1.

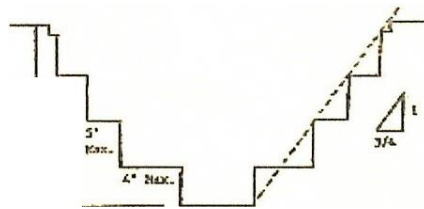


**Simple Slope - Short Term**

2. All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 3/4 to 1 and maximum bench dimensions as follows:

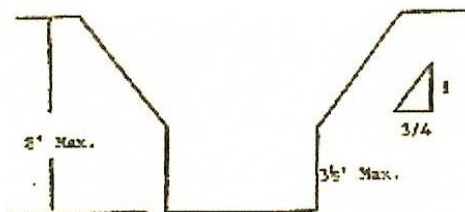


**Simple Bench**



**Multiple Bench**

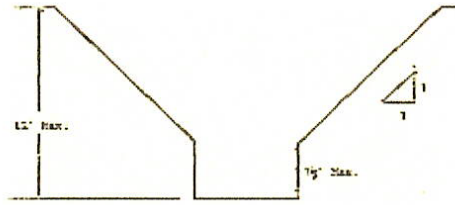
3. All excavations 8 feet or less in depth which have unsupported vertically sided lower portions shall have a maximum vertical side of 3 1/2 feet.



**Unsupported Vertically Sided Lower Portion - Maximum 8 Feet Depth**

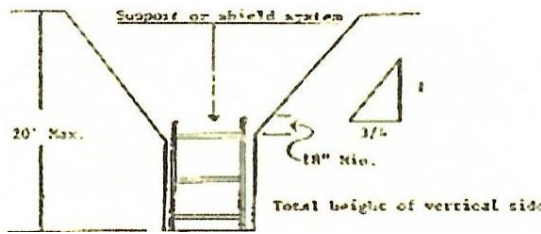
All excavations more than 8 feet but not more than 12 feet in depth which unsupported vertically sided

lower portions shall have a maximum allowable slope of 1:1 and a maximum vertical side of 3 1/2 feet.



**Unsupported Vertically Sided Lower Portion - Maximum 12 Feet Depth**

All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of 3/4:1. The support or shield system must extend at least 18 inches above the top of the vertical side.



**Support of Shielded Vertically Sided Lower Portion**

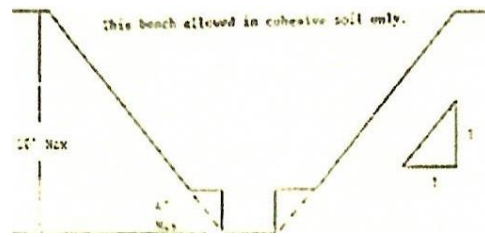
4. All other simple slope, compound slope, and vertically sided lower portion excavations shall be in accordance with the other options permitted under §1926.652(b).

***B-1.2 Excavations made in Type B Soil.***

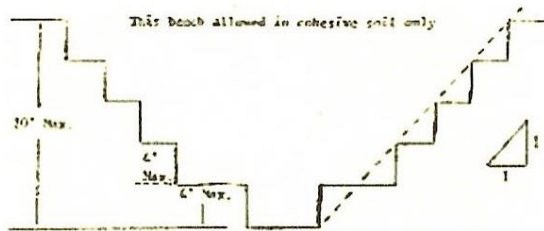
1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1.
2. All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1 and maximum bench dimensions as follows:



**Simple Slope**

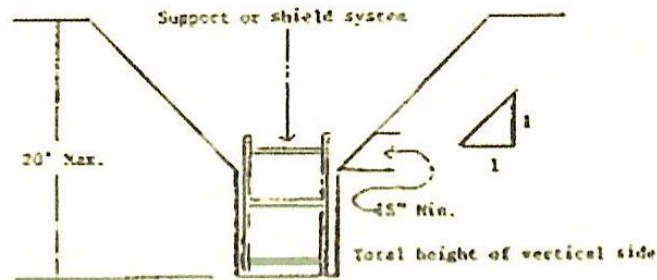


**Single Bench**



**Multiple Bench**

3. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1:1.

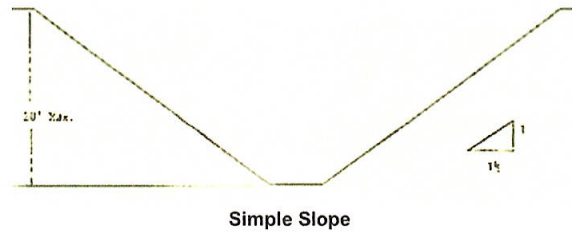


**Vertically Sided Lower Portion**

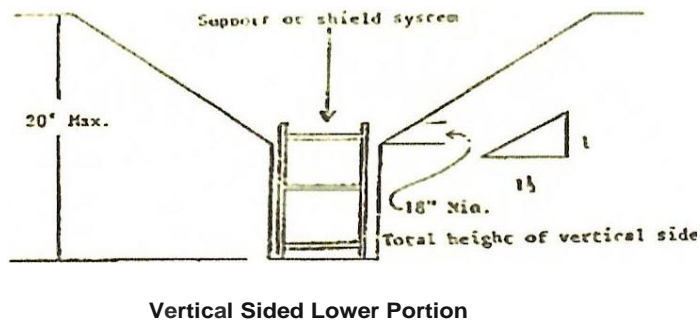
4. All other sloped excavations shall be in accordance with the other options permitted in §1926.652(b).

***B-1.3 Excavations made in Type C Soil.***

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1 1/2:1.



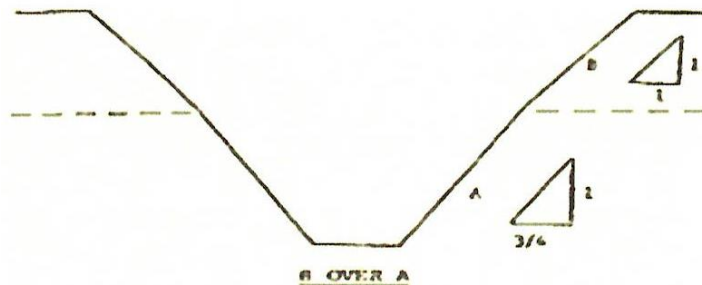
2. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1 1/2:1.

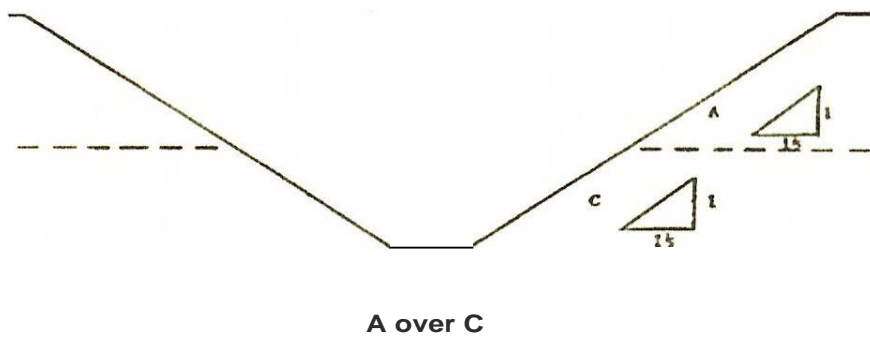
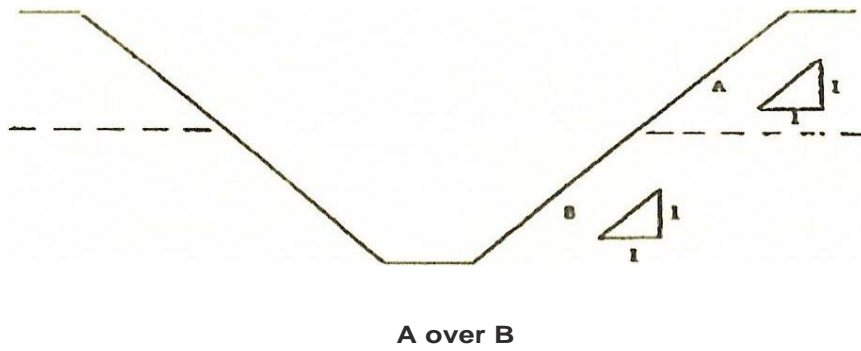
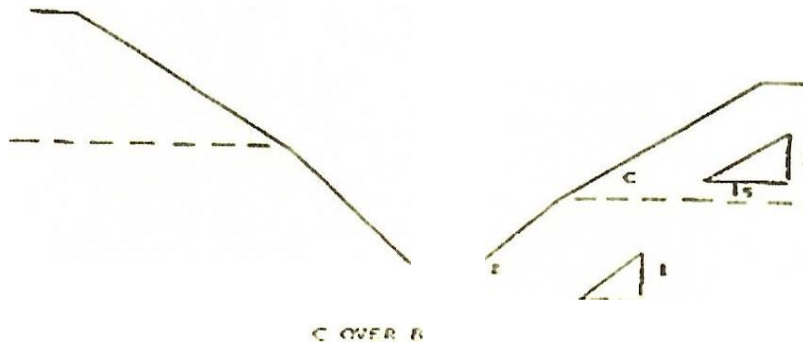
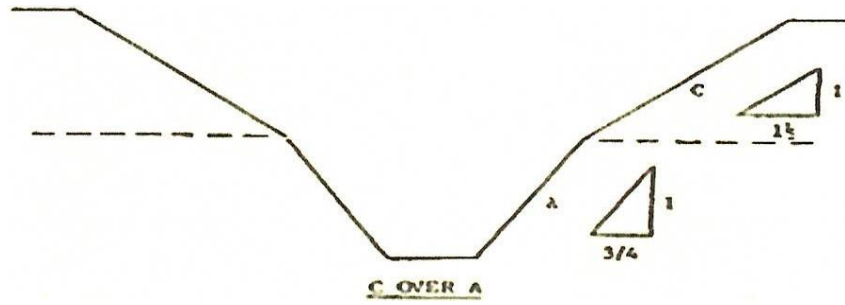


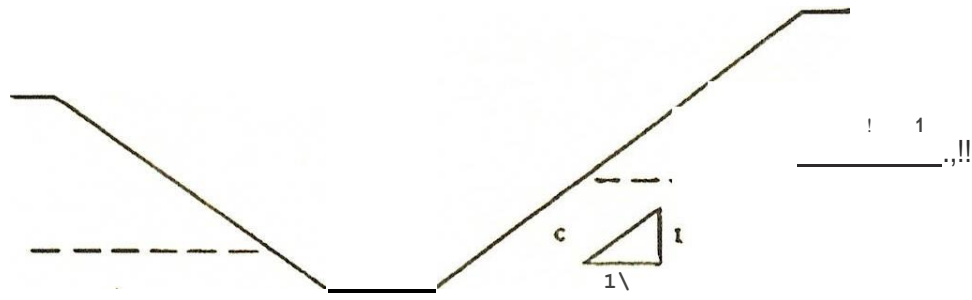
3. All other sloped excavations shall be in accordance with the other options permitted in §1926.652(b).

***B-1.4 Excavations made in Layered Soils.***

1. All excavations 20 feet or less in depth made in layered soils shall have a maximum allowable slope for each *layer* as set forth below.







**B over C**

- 2. All other sloped excavations shall be in accordance with the other options permitted in §1926.652(b).

**Stat. Auth.:** ORS 654.025(2) and 656.726(4).  
**Stats. Implemented:** ORS 654.001 through 654.295.  
**Hist:** OR-OSHA Admin. Order 8-1990, f. 3/30/90, ef. 9/1/90.

Oregon Administrative Rules  
Oregon Occupational Safety  
and Health Division



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## APPENDIX 50: CITY OF PENDLETON EXCAVATION SAFETY POLICY & PROCEDURES

Employee Name: \_\_\_\_\_ (please print)

SS# (last 4 digits): \_\_\_\_\_

Date Received: \_\_\_\_\_

*This form must be signed, dated, and then delivered to your supervisor within 10 working days after the date received.*

I have received my copy of the City of Pendleton's Excavation Safety Policy & Procedures. I have personally reviewed the policy and procedures before signing and dating this form below.

I understand that I am responsible to follow the requirements of these procedures. Any questions I might have concerning this program have been discussed with my supervisor and/or department head. Those questions were adequately answered. I also understand that if I do not follow these requirements, I am subject to disciplinary action up to and including discharge.

---

Employee's Signature

Date

## APPENDIX 51: WORKPLACE VIOLENCE REPORT

Any employee who is subject to or becomes aware of any violent acts or threats of violence will immediately report the matter to the Supervisor or any higher level of authority and will complete this form.

Name of person committing violent act or making threat: \_\_\_\_\_

Or description of threat maker:

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Name of the victim(s) or potential victim(s): \_\_\_\_\_

Describe what happened:

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---

What was the threat? (Be as specific as possible; what were the exact words?)

---

---

Names of any witnesses and any other persons involved:

---

---

What happened immediately prior to the incident?

---

---

What steps were taken to prevent the threat from being carried out?

---

---

Do you have suggestions for preventing such incidents?

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Name of Person Filing Report (please print)	Signature of Personal Filing	Date
---	------------------------------	------

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Name of Person Receiving Report	Name of Person Receiving	Date
---------------------------------	--------------------------	------

# APPENDIX 52: FORKLIFT TRAINING CHECKLIST RECORD

Assigned Employee: \_\_\_\_\_

Type of Forklift \_\_\_\_\_

Supervisor/Instructor: \_\_\_\_\_ Date: \_\_\_\_\_

## Part 1: Forklift Safety Policy

\_\_\_\_\_ The "Basic Forklift Safety Policy" was reviewed with the employee, and the written forklift test part 1 and 2 was given and reviewed.

## Part 2: Machine Operator Pre-Shift Checklist

\_\_\_\_\_ The pre-shift forklift checklist was reviewed, and the employee was shown and demonstrated the visual inspection procedures per form (see attached).

## Part 3: Driver Skill Demonstration

The forklift operation and controls were demonstrated. The employee was observed during operation of the vehicle which included the following driving skill test:

- \_\_\_\_\_ Handling of the forklift including: forward, backwards driving while unloaded
- \_\_\_\_\_ Handling the forklift with a banded or bundled load and rearranging a stack of boxes or other materials on pallet
- \_\_\_\_\_ Hauling unbanded material.
- \_\_\_\_\_ Demonstrates the ability to keep the load under control and follows forklift driving procedures as outlined in the OR-OSHA rules and basic safety procedures.
- \_\_\_\_\_ Demonstrates proper method for parking the vehicle.

## Observations on Driving Ability:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## APPENDIX 53: FORKLIFT OPERATOR CHECKLIST

### INSPECTION BEFORE OPERATIONS – CHECK WITH ENGINE STOPPED

Vehicle Element	Initial if OK, note any concerns
1. Fuel level	
2. Oil level in the engine, and hydraulic tank	
3. Coolant levels and condition of the drive belts	
4. Condition of the radiator	
5. Condition of the forks, carriage, chains, upright & overhead guard	
6. Leads from the engine, transmission, hydraulic system & fuel system	
7. Condition of wheels, tires, and air pressure of pneumatic tires	
8. Seat belt latches properly	
9. Seat is secure & latched to the hood	
10. Hood is securely latched.	

### Check with Engine Running

*(Note: make sure that the area around the forklift is clear before starting the engine or making any operational checks.)*

Forklift Element	Check if OK, note any problems
1. Check the operation of the horn, gauges and indicator lights	
2. Check the oil level in the powershift transmission or oil clutch system when the engine is running at idle.	
3. Operate the LIFT, TILT, and auxiliary functions to check for correct operations.	
4. Check the operation of manual transmission and clutch.	
5. Check the operation of the powershift transmission, MONOTROL pedal or the direction control lever and accelerator pedal.	
6. Check the operation of the service brakes and parking brakes	
7. Check the operation of the steering system. Driving and Direction Changes.	

# APPENDIX 54: FORKLIFT OPERATOR TEST

*CIRCLE THE CORRECT ANSWER*

## Part 1: Inspection, Maintenance & Vehicle Care

1. The operator shall make an operational test or check of all parts which are vital to safe operation:
  - a) Annually
  - b) Monthly
  - c) At the start of each shift or prior to use for the day
  - d) When the maintenance staff has time
  
2. Any necessary repairs or adjustments must be made:
  - a) Before the forklift is put into operation
  - b) At the end of the shift
  - c) Whenever the vehicle is scheduled for routine maintenance
  - d) By maintenance staff when it seems really serious
  
3. If during operation the driver notices a problem with the forklift he/she should:
  - a) Attempt to make repairs themselves
  - b) Take the forklift out of service immediately and notify his/her supervisor of the malfunction or unsafe condition
  - c) Use the forklift to complete the job and then report it at the end of shift
  - d) Not worry about it
  
4. Operator's cab area must be kept clear of tools and other materials.
  - a) True
  - b) False
  
5. When forklifts are being fueled, the motor must be turned off and no smoking allowed in the vicinity.
  - a) True
  - b) False
  
6. Hands, soles of shoes, steering wheels and control pedals must be kept free of slippery substances such as oil and grease.
  - a) True
  - b) False
  
7. Which of the following defects discovered by the operator during a routine check would qualify the vehicle to be "taken out of service":
  - a) Missing guard on the mast
  - b) Oil leak
  - c) Deformed overhead protection
  - d) Exposed exhaust pipe
  - e) All of the above

## Part 2: Safe Operation of the Forklift

8. Passenger may be allowed on a forklift if:
  - a) He or she is the manager
  - b) He or she only wants to ride a short way
  - c) Never

9. Forklifts are steered by the:
  - a) Front wheels
  - b) Back wheels
10. To keep loads from sliding off the forks, always place the forks under the load as far as possible, at the center of its weight and lift with the mast vertical or slightly tilted back.
  - a) True
  - b) False
11. Forklifts are so stable that bumps, holes and slick spots cannot upset them or cause loads to spill.
  - a) True
  - b) False
12. Forklifts are open to allow the driver easy access; therefore, it is permissible to have arms, legs or head outside of the canopy when traveling or operating the vehicle.
  - a) True
  - b) False
13. A forklift is considered unattended when:
  - a) The driver is 25 feet or more away
  - b) The vehicle is out of view of the operator
  - c) The supervisors said it is OK
  - d) Both a & b
14. Whenever the vehicle is unattended, the engine must be shut off, the controls neutralized, the parking brake set and the forks fully lowered.
  - a) True
  - b) False
15. Many forklift accidents have occurred due to:
  - a) Masts colliding with overhead beams or pipes
  - b) The operator not watching the direction of travel
  - c) Traveling with forks in the raised position
  - d) All of the above
16. When going down inclines, drive in reverse. Drive forward when climbing inclines.
  - a) True
  - b) False
17. Forklifts may be used as heavy-duty jacks.
  - a) True
  - b) False
18. When traveling with a load, it doesn't matter what level the forks are as long as the operator can see:
  - a) True
  - b) False
19. Loads may be lifted while traveling.
  - a) True
  - b) False

## APPENDIX 55: FORKLIFT TEST ANSWER SHEET

Question	Answer	Explanation
<b>Part I.</b>		
1.	c.	Each operator must visually inspect the forklift for leaks or deformities, missing guards or parts as well as doing an operational check on controls, brakes, horns and other warning devices.
2.	a.	No forklift may be operated until all defects are repaired.
3.	b.	Until repaired, any defective forklift must be removed from service and only authorized personnel allowed to work on forklifts.
4.	a. True	Loose articles may interfere with safe operations of the forklift or may strike the operator or pedestrians should the vehicle stop suddenly or make a sharp turn.
5.	a. True	This should be standard operating procedure for all fuels to prevent fire and explosion.
6.	a. True	Oily hands and feet may cause the operator to lose control of the forklift.
7.	e.	Chains/sprockets which can be contacted by the operator must be guarded; all leaks must be repaired; canopies must maintain strength integrity to protect the operator from falling objects, hot surfaces which can be contacted by the operator must be insulated or guarded.
<b>PART II.</b>		
8.	c.	Riders are never permitted on forklifts unless proper seats are provided within the canopy.
9.	b.	Because they are steered with the rear wheels, the rear end swings can injury workers on the floor. The operator must always be aware of the rear swing hazard.
10.	a. True	The load should be tilted only enough so the load rests against the heel of the forks or the back load rest.
11.	b. False	Any of these conditions can cause the vehicle to upset. Surfaces should be leveled and holes filled in. All slick spots should be cleaned up or neutralized.
12.	b. False	No part of the body is allowed outside of the canopy when traveling or operating the vehicle.
13.	d.	Unattended vehicle occurs when the operator is 25 feet or more away even if the vehicle is still in sight or whenever the operator cannot see the vehicle no matter what the distance.
14.	a. True	In both instances cited in 6 above, the vehicle must be rendered harmless when "unattended".
15.	d.	It is essential that the operator be aware of overhead clearance restrictions, that the direction of travel be watched and that the forks be kept as low as possible at all times when traveling.
16.	a. True	In order to keep the load against the heel of the forks, drive in reverse when going down inclines, forward when climbing inclines.
17.	b. False	Forklifts, as well as all other equipment, must be used for the purpose they were designed for. Using the vehicle as a heavy duty jack can easily exceed its capacity.
18.	b. False	Loads should be carried close to the ground. Usually 6 inches or just high enough to clear rises and bumps on the driving surface. When they are carried too high the stability of the truck is affected. There is also the possibility that the load or

---

a part of it can fall on someone. If visibility is the problem, turn around, travel in reverse and face the direction of travel.

19. b. False

Lifting the load while traveling may seem the natural thing to do but the stability of the truck is affected by this practice. Do not lift the load while traveling.



## APPENDIX 56: FORKLIFT TRAINING CERTIFICATION

The forklift training regulations require that employees be trained and certified with a valid license before they are allowed to drive.

This is to certify that \_\_\_\_\_ has satisfactorily completed a basic lift truck operator training program that has included the following material:

1. Safety Equipment
2. Visual Checks
3. Load Handling Equipment
4. Hydraulic System
5. Fluid Leaks
6. Fluid Levels
7. Operational Checks
8. Safe Refueling Procedures
9. Knowing the Truck
10. Handling Loads
11. Safe Driving
12. Parking Your Forklift
13. Staying Alert
14. What to Do in an Emergency
15. Safety Rules

I have had my responsibilities relating to the handling and care and safe operation of basic lift truck operation explained to me. I understand that I can be held accountable for any deliberate act or negligence that pertains to my duties in operating a lift truck.

Employee  
Signature: \_\_\_\_\_

Date: \_\_\_\_\_

The above employee has passed/not passed the written test.

Instructor Signature: \_\_\_\_\_

Date: \_\_\_\_\_

The above employee has passed/not passed the driving portion of the forklift test.

Instructor Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## APPENDIX 57: FALL PROTECTION EMPLOYEE TRAINING CERTIFICATION

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 (Employee Name)

(Date)

The City of Pendleton Fall Protection Plan has been reviewed with me. This included information on the following:

1. Recognition of fall hazards due to the nature of the work area.
2. Fall protection requirements.
3. Correct procedures for erecting, maintaining, disassembling and inspecting the fall protection system to be used.
4. The use and operation of the following systems as they apply to the need for fall protection at the job site:
  - a. guardrail systems
  - b. personal fall arrest systems
  - c. safety net system
  - d. warning line system
  - e. safety monitoring
  - f. controlled access zones
  - g. other protection to be used
5. Each employee needs to understand his/her role if a safety monitoring system is used.
6. The correct procedures for the handling and storage of equipment and materials and erection of overhead protection.
7. The role of employees in fall protection plans as applicable.
8. Review of the OSHA or WISHA fall protection standard.
9. The City's enforcement and discipline policy.

*I understand the fall protection procedures and policy. My supervisor has shown me the specific equipment procedures.*

---

 Employee Signature

---

 Trainer's/Supervisor's Signature

Date

The following training has been given to ensure that the employee understands the specific fall equipment operation procedure. This includes providing the following information: (Fill in as applicable)

A. \_\_\_\_\_

B. \_\_\_\_\_

## APPENDIX 58: GENERAL FALL PROTECTION WORK PLAN

Job Location: \_\_\_\_\_

Job Description: \_\_\_\_\_

### Instructions:

1. Inspect the site prior to the start of the job.
2. Complete this form.
3. Post at worksite where it can be plainly seen along with the summarized plan.

### Fall Hazards – 6 feet or more

<input type="checkbox"/> Open Beam/Truss/Frame Work	<input type="checkbox"/> Standard Scaffold/Staging
<input type="checkbox"/> Beyond Guard Rails	<input type="checkbox"/> Roof Edge
<input type="checkbox"/> Hanging Scaffolds/Staging	<input type="checkbox"/> Erection/Disassembly
<input type="checkbox"/> Tank/Vessel/Equipment Tops	<input type="checkbox"/> Pipe Rack System
<input type="checkbox"/> Equipment Frame	<input type="checkbox"/> Floor Opening
<input type="checkbox"/> Other	(Please Describe): _____

### Other Hazards

<input type="checkbox"/> Electrical	<input type="checkbox"/> Hot Surfaces	<input type="checkbox"/> Overhead
<input type="checkbox"/> Water	<input type="checkbox"/> Foot Traffic	<input type="checkbox"/> Below
<input type="checkbox"/> Chemical	<input type="checkbox"/> Erection/Disassembly	
<input type="checkbox"/> Other	(Please Describe): _____	

### Methods of Protection to be Used

<input type="checkbox"/> Guardrail	<input type="checkbox"/> Harness	<input type="checkbox"/> Rope Protection
<input type="checkbox"/> Parapet Wall	<input type="checkbox"/> Safety Block	<input type="checkbox"/> Sling/Runners
<input type="checkbox"/> Barrier Structure	<input type="checkbox"/> Rope Grab	<input type="checkbox"/> RFP w/ Boatswain
<input type="checkbox"/> Fixed Lanyard	<input type="checkbox"/> Life Line	<input type="checkbox"/> Safety Net
<input type="checkbox"/> Retractable Lanyard	<input type="checkbox"/> Warning Line (low pitched roofs/floors only)	
<input type="checkbox"/> Other	(Please Describe): _____	

### Methods of Work Area Access

<input type="checkbox"/> Portable Ladder	<input type="checkbox"/> Roof	<input type="checkbox"/> Truss/Beam
<input type="checkbox"/> Fixed Ladder	<input type="checkbox"/> Manlift	<input type="checkbox"/> Framework
<input type="checkbox"/> Scaffolding	<input type="checkbox"/> Staging	<input type="checkbox"/> Suspended Deck
<input type="checkbox"/> Other	(Please Describe): _____	

**Methods of Material/Tool Handling**

- Line
- Hoist
- Crane
- Material stored at least 10 feet away from edge and no higher than barrier
- Tool Belt
- Tool Bucket
- Designated Lifting Zone

**Methods of Securing Lanyards/Lines (Minimum of 5,000 lbs Holding Force)**

- Ladder Siderail (secured)
- Eye Bolts
- Other (Please Describe): \_\_\_\_\_
- Structural Workings
- Steel Pipe

**Location of Anchor Points (Describe)**

\_\_\_\_\_

\_\_\_\_\_

**Other**

Fall protection equipment inspected prior to use Yes \_\_\_ No \_\_\_

Equipment inspected by: \_\_\_\_\_

Name of monitor assigned (leading edge work only) \_\_\_\_\_

Has the work plan been reviewed in detail with person assigned working below Yes \_\_\_ No \_\_\_

Barrier tape/tags set up for overhead hazards when people are working below Yes \_\_\_ No \_\_\_

**Person Assigned**

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Competent Person: \_\_\_\_\_

Date: \_\_\_\_\_

## APPENDIX 59: HOT WORK PROCEDURES AND PERMIT INSTRUCTIONS

### Instructions:

1. This cutting and welding permit may only be issued by a Supervisor and must be used for all cutting and welding done outside of an approved shop where there is potential exposure to flammable materials.
2. The purpose of the permit is to describe the welding zone controls, such as using fire proof blankets or other protective shields when materials in nearby areas can be affected by welding arcs, flames, sparks, spatter, slag, or heat.
3. Complete the checklist below before issuing the permit.
4. Display the permit in a highly visible location at the job site.
5. The permit is to be picked up by the Supervisor who issued the permit after the work is completed. In the event of a change of shifts, it is the responsibility of the Supervisor who issued the permit to notify the Supervisor following that a permit was issued and will need to be picked up.
6. If a permit is issue for an unstaffed area of the worksite, it may be necessary to establish a fire watch after welding is completed.

### Checklist of Required Precautions:

- \_\_\_\_\_ Floor swept clean of combustibles
- \_\_\_\_\_ Floor wet down (if floor or surface is flammable material)
- \_\_\_\_\_ Flammable liquids removed; other combustible, if not removed, wet down or protected with fire-resistant tarpaulins or metal shields.
- \_\_\_\_\_ Explosives atmospheres in area are eliminated.
- \_\_\_\_\_ All wall and floor openings covered or provide an additional firewatch at the lower level.
- \_\_\_\_\_ Firewatch will be provided during and for AT LEAST 30 minutes after working and during any coffee or lunch breaks.
- \_\_\_\_\_ Firewatch is supplied with a charged fire hose.
- \_\_\_\_\_ Firewatch is trained in the use of this equipment.

Job Date: \_\_\_\_\_

Job Location: \_\_\_\_\_

Nature of Job: \_\_\_\_\_

Welder's Name: \_\_\_\_\_

Time Started \_\_\_\_\_ Time Finished: \_\_\_\_\_

Firewatch Name: \_\_\_\_\_

---

Final Checkup by Maintenance: Work area and all adjacent areas to which sparks and heat might have spread (i.e. floors above and below and opposite side of walls) were inspected after the work was completed and found to be fire safe.

Maintenance Person Signature: \_\_\_\_\_

Final Checkup by Supervisor: 2 to 4 hours after work completed

Date & Time: \_\_\_\_\_  
Signature of Personal Responsible: \_\_\_\_\_

Date: \_\_\_\_\_

Location: \_\_\_\_\_

Work to be Done: \_\_\_\_\_

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Maintenance: \_\_\_\_\_

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Instructions to Firewatch: \_\_\_\_\_

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Firewatch Names: \_\_\_\_\_

# APPENDIX 60: SAFETY SUGGESTION FORM



## SAFETY SUGGESTION FORM

Please describe your safety concern, idea, or suggestion below. Be as specific as possible. If you would like to know the outcome of the Safety Committee's review of your suggestion, please include your name.

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Department where safety problem is occurring: \_\_\_\_\_

Name (optional) \_\_\_\_\_ Date: \_\_\_\_\_



## SAFETY SUGGESTION FORM

Please describe your safety concern, idea, or suggestion below. Be as specific as possible. If you would like to know the outcome of the Safety Committee's review of your suggestion, please include your name.

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Department where safety problem is occurring: \_\_\_\_\_

Name (optional) \_\_\_\_\_ Date: \_\_\_\_\_

# APPENDIX 61: ASBESTOS REPORT

## ASN 4

### ASBESTOS WASTE SHIPMENT REPORT FORM



PLEASE PRINT OR TYPE. If you have questions, contact your local DEQ Regional Office in Portland 503-229-5364, Salem 503-378-5086, Medford 541-776-6107, Coos Bay 541-269-2721 ext. 222, Bend 541-633-2019, or Pendleton 541-278-4626.

**WASTE GENERATOR:** (Contractor, Facility, or Operator)

1. Asbestos removal site name and address: \_\_\_\_\_

Street \_\_\_\_\_ City/State \_\_\_\_\_ County \_\_\_\_\_ Zip \_\_\_\_\_

Contact person: \_\_\_\_\_ Phone: \_\_\_\_\_

2. Contractor/Operator's name and address: \_\_\_\_\_ Phone: \_\_\_\_\_

Street \_\_\_\_\_ City/State \_\_\_\_\_ County \_\_\_\_\_ Zip \_\_\_\_\_

3. Waste disposal site: \_\_\_\_\_ Phone: \_\_\_\_\_

Street \_\_\_\_\_ City/State \_\_\_\_\_ County \_\_\_\_\_ Zip \_\_\_\_\_

4. Describe asbestos materials: \_\_\_\_\_

5. Containers: Number: \_\_\_\_\_ Type: \_\_\_\_\_

6. Total quantity (cubic yards): \_\_\_\_\_

7. **OPERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packaged, marked and labeled, and are in all respects in proper condition for transport according to all government regulations. All movement of this asbestos-containing material is recorded on this Waste Shipment Record Form.

Agent: \_\_\_\_\_ Company: \_\_\_\_\_

Address: \_\_\_\_\_ Phone: \_\_\_\_\_

**TRANSPORTER(S):**

8. Transporter #1: (Acknowledgment of receipt of materials)

Agent: \_\_\_\_\_ Company: \_\_\_\_\_

Address: \_\_\_\_\_ Phone: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

9. Transporter #2: (Acknowledgment of receipt of materials)

Agent: \_\_\_\_\_ Company: \_\_\_\_\_

Address: \_\_\_\_\_ Phone: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**DISPOSAL:** (Certification of receipt of asbestos materials covered by this manifest, except as noted in item 11 below.)

10. Waste Disposal Site: \_\_\_\_\_

Name and Title: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_ Phone: \_\_\_\_\_

11. **DISCREPANCY SPACE:** (Add attachments as needed) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# Instructions for using DEQ Form ASN 4 Waste Shipment Report Form

This form is to be used as a permanent record for documenting asbestos-containing waste materials from removal site to final disposal. The Oregon Department of Environmental Quality (DEQ) regulation that applies to asbestos waste disposal is found in OAR 340-248-0280 and -0290.

## WASTE GENERATOR SECTION

(Numbers below correspond to numbers on the front of this Form)

1. Enter the name and address of the site where the asbestos waste was generated. Enter the name and phone number of the contact person for the contractor, facility, or operator of the asbestos waste generation site.
2. Enter the name, phone number and address of the person performing the asbestos abatement.
3. Enter the name, phone number and address of the disposal site that the waste is taken to.
4. Describe the materials being removed. (i.e. pipe insulation, flooring, roofing, popcorn ceiling material, HVAC system insulation, **or** nonfriable asbestos.)
5. List the total number of containers and their type. Also enter one of the following container codes used in transporting each type of asbestos material. (Specify any other type of container used if not listed below):
 

DM	Metal drums, barrels	DP	Plastic drums, barrels
BA	6 mil. plastic bags or wrapping		
NFC	Leak-tight containerization for nonfriable asbestos waste material.		
6. Give an estimate of the total cubic yards of material.
7. Print clearly the name of the company and their authorized signer. This section of the form must be signed and dated.

**NOTE: The waste generator must retain a copy of the completed disposal form.**

## WASTE TRANSPORTER SECTION

8. Transporter #1: Acknowledgment of receipt of asbestos waste materials. Print agent and company name, then sign and date.
9. Transporter #2: Acknowledgment of receipt of asbestos waste materials. Print agent and company name, then sign and date.

**NOTE: If there are more than two transporters attached a new waste shipment form.**

## DISPOSAL SITE SECTION

10. List the name of the waste disposal site, print the name, title and phone number, then sign and date form. This certifies that you have received the asbestos material covered by this manifest.
11. Discrepancy space. This space is used if there is a discrepancy between the amount of the material received by the landfill and the amount of material listed on the waste shipment report form.

**NOTE: The waste disposal site operator must retain a copy of this form.**

In addition, asbestos waste disposal regulations require that the Waste Disposal Site operators take the following actions:

- Send a copy of the completed and signed Waste Shipment Report Form to the Waste Generator as soon as possible, but no later than 30 days after the waste has been received at the disposal site.
- Notify DEQ immediately by telephone of improperly enclosed or uncovered waste. Submit a written report to DEQ the following working day, along with a copy of the Waste Shipment Report Form.
- If you discover a discrepancy between the quantity of waste designated on the Waste Shipment Report Form and the quantity of waste actually received, attempt to reconcile the discrepancy with the Waste Generator. You must report, in writing, to DEQ within 15 days after receiving the waste any discrepancies that cannot be reconciled. Submit a copy of the Waste Shipment Report Form with this report.

## APPENDIX 62: CONFINED SPACE INVENTORY

<b>Confined Space Inventory--Parks &amp; Facilities Vaults</b>				
<b>Appendix 62</b>				
<b>NAME</b>	<b>ADDRESS</b>	<b>DESCRIPTION</b>	<b>ACCESS</b>	<b>DESIGNATION</b>
Airport Park	4801 NW "H" Ave			permit-required
Aldrich Park	1101 NW King Ave			permit-required
Aquatic Center	1901 NW Carden Ave			permit-required
Bob White Ballpark	2120 NW Carden Ave			permit-required
Brownfield Park	12 S Main St			Alternate Entry
Cemetery	865 Tutuilla Rd	4' w x 6' l x 6' d vault across from Denny's	Double Doors on top	permit-required
Cemetery by Main Gate	865 Tutuilla Rd	4' w x 4' l x 4' d vault 30' inside gate	2' Round Lid	permit-required
Cemetery House	825 SW 23rd St			permit-required
Centennial Park	101 SE Dorion Ave		2' Round Lid	permit-required
Centennial Park	101 SE Dorion Ave	3' w x 3' l x 30" vault with lid	3' Square Door	Alternate Entry
City Hall Fountain	500 SW Dorion	6' w x 10' l x 8' d vault with lid	Double Doors on top	Alternate Entry
Community Park Eastside	1000 SW 37th St	4' w x 6' l x 6' d vault in parking by shelter	Double Doors on top	permit-required
Community Park Westside	1200 SW 44th St	4' w x 6' l x 6' d vault S of bathrooms 300'	Double Doors on top	permit-required
		& E of baseball fields		permit-required
Grecian Heights Park	1910 SW Athens Ave	4' w x 6' l x 6' d vault in grass SW of		permit-required
		bathroom 40'	Double Doors on top	permit-required
Interchange COWS	freeway interchange	4' w x 4' l x 4' d vault in grass	3' Square Door	permit-required
Isaac Park	501 SE Isaac Ave			permit-required
Kiwanis Park	1800 SE Byers Ave			permit-required
Little League Park	2001 SE Byers Ave			permit-required
May Park	180 SE Isaac Ave			permit-required
McKay Neighborhood Park	1531 SW 44th St	6' w x 7' l x 7' d, 20' from SW 44th	2' Round Lid	permit-required
Museum Park	108 SW Frazer Ave	4' w x 4' l x 4' d vault between Chamber office & RR tracks on S Main	2' Round Lid	permit-required
Nye Park	550 SW Nye Ave			permit-required
Parachute Park	SW Hailey & SW 13th St			permit-required
Pioneer Park	400 NW Despain			permit-required
Railroad area	400 SW Frazer	4' w x 4' l x 4' d vault in gravel	3' square door	Alternate Entry
Rice Park	2220 SW Quinney Ave	4' w x 6' l x 6' d vault in grass area	Large metal lid	permit-required
Riverfront Park	401 SW Court Ave	4' w x 6' l x 6' d vault next to curb	Double Doors on top	permit-required

Roy Raley Park	1205 SW Court Ave	4' w x 4' l x 4' d vault @ back of sidewalk	2' Round Lid	permit-required
Sargent City Park	500 NW 14th St	4' w x 6' l x 6' d vault on NW 14th	Double Doors on top	permit-required
Sherwood Park	720 SW 29th St	4' w x 6' l x 4' d vault @ driveway entrance	Double Doors on top	permit-required
Skate Park	101 Northgate			permit-required
South Main Park	943 S Main Pl			permit-required
Stillman Park	413 SE Byers Ave	4' w x 4' l x 4' d vault back of sidewalk	2' Round Lid	permit-required
Til Taylor Park	700 SE Dorion Ave	4' w x 4' l x 4' d vault in sidewalk by pool	2' Round Lid	permit-required
Trailhead Park	2101 Westgate Pl			permit-required
Un-named Park	1020 SW 25th St			permit-required
Vincent Park	400 NW Ingram Ave			permit-required

# APPENDIX 63: SPECIAL WASTE APPLICATION

**Finley Buttes Regional Landfill**  
 73221 Bombing Range Road  
 Boardman, OR 97818  
 PH: 541.481.2233  
 FX: 541.481.2234



<b>FOR OFFICE USE ONLY</b>	
APPROVAL NUMBER:	
EXPIRATION DATE:	
APPROVED BY:	

**SPECIAL WASTE APPLICATION**

Information utilized for completion of this form must originate from an authorized representative of the generator of the waste material. The information on this form must be COMPLETELY FILLED OUT, TYPE WRITTEN, and the form must be SIGNED BY AUTHORIZED REPRESENTATIVE.

A. PROFILE INFORMATION	
1. <input type="checkbox"/> Initial <input type="checkbox"/> Recertification, list prior approval number(s):	
2. Have there been any changes to the composition of, or process generating this waste stream that would alter the characteristics of the waste stream? <input type="checkbox"/> YES <input type="checkbox"/> NO (Updated analysis may be required even if no change to process or composition.)	
B. GENERATOR INFORMATION	C. CUSTOMER/BILLING INFORMATION
1. Generator Name:	1. Billing Name:
2. Address:	2. Address:
City: _____ County: _____	City: _____ County: _____
State: _____ Zip: _____	State: _____ Zip: _____
3. Site Location (if different):	3. Contact Name:
4. Contact Name:	4. Phone Number: _____ 5. Fax Number: _____
5. Phone Number: _____ 6. Fax Number: _____	6. Email Address: _____
7. Email Address: _____	7. Is there a service agreement on file? <input type="checkbox"/> YES <input type="checkbox"/> NO
8. State Facility ID # (if applicable):	8. Agent / Consultant:
9. State Waste Code (if applicable):	9. Letter of Authorization: <input type="checkbox"/> YES <input type="checkbox"/> NO
D. TRANSPORTER/SHIPPING INFORMATION	E. WASTE STREAM INFORMATION
1. Name:	1. Common Name of Material or Waste Stream:
2. Street Address:	2. Detailed Description of Process or How Generated <i>(check additional sheet if needed)</i>
City: _____ State: _____ Zip: _____	3. Physical State at 70°F: <input type="checkbox"/> Solid <input type="checkbox"/> Semi-Solid <input type="checkbox"/> Sludge <input type="checkbox"/> Liquid <input type="checkbox"/> Powder <input type="checkbox"/> Other _____
3. Phone Number: _____ 4. Fax Number: _____	4. Free Liquids: <input type="checkbox"/> NO <input type="checkbox"/> YES % Liquids: _____
5. Contact Name:	5. Color: _____ 6. pH Range: _____
6. EPA or State Transporter ID #:	7. Odor: <input type="checkbox"/> None <input type="checkbox"/> Mild <input type="checkbox"/> Significant Describe: _____
7. Designated Landfill(s):	8. Flash Point: <input type="checkbox"/> °F <input type="checkbox"/> °C
8. Packaging: <input type="checkbox"/> Bulk Solids <input type="checkbox"/> Bulk Liquids <input type="checkbox"/> Drums <input type="checkbox"/> Roll-Off <input type="checkbox"/> Dump Truck <input type="checkbox"/> Tank Truck <input type="checkbox"/> Vacuum Box <input type="checkbox"/> Bagged	9. Reactive: <input type="checkbox"/> NO <input type="checkbox"/> YES with: _____
9. Estimated Volume: _____ <input type="checkbox"/> Tons <input type="checkbox"/> Cubic Yards <input type="checkbox"/> Drums <input type="checkbox"/> Gallons <input type="checkbox"/> Other: _____	10. State Required Information (if applicable):
10. Shipping Frequency: _____ per: <input type="checkbox"/> One Time Project <input type="checkbox"/> Month <input type="checkbox"/> Quarter <input type="checkbox"/> Year <input type="checkbox"/> Other: _____	
F. NON-HAZARDOUS DETERMINATION	
1. Attached Document(s) (check all that apply): <input type="checkbox"/> Not Applicable <input type="checkbox"/> Process Knowledge <input type="checkbox"/> MSDS <input type="checkbox"/> Certified Analytical Report <input type="checkbox"/> Exempt Waste	
2. If Process Knowledge, provide details:	
3. If analytical data is attached, is the data derived from testing a representative sample in accordance with 40 CFR 261 and/or other applicable laws? <input type="checkbox"/> YES <input type="checkbox"/> NO Type of Sample: <input type="checkbox"/> Composite <input type="checkbox"/> Grab Analysis Provided: _____	
4. If Exempt Waste, check applicable item below: <input type="checkbox"/> UST Corrective Action – 40 CFR 261.4(b)(10) <input type="checkbox"/> PCB Bulk Product Waste – 40 CFR 761.62 <input type="checkbox"/> Oil & Gas E&P Waste – 40 CFR 261.4(b)(5) <input type="checkbox"/> RCRA-Empty Containers – 40 CFR 261.7 <input type="checkbox"/> Other (provide reference): _____	
G. GENERATOR CERTIFICATION STATEMENT:	
I hereby certify that all information contained herein is true and correct, and the material described is properly identified, classified, packaged, labeled, and prepared as indicated. I certify this waste is not hazardous or dangerous as defined by the U.S. EPA, or the state or province of origin. I certify this waste does not contain any regulated radioactive materials, that all known and suspected hazards have been disclosed, and that the waste is not a regulated hazardous waste by government or local authority, and does not contain PCB's regulated by TSCA or any other regulatory authority. I certify that all samples used for this analysis are representative of the materials described herein. I understand that all wastes may undergo inspection upon arrival at the designated facility and may be refused if the delivered material does not conform to the description herein. Notification will be provided immediately if there is a change in the composition of, or process generating this waste stream, prior to offering the waste for shipment or management.	
AUTHORIZED REPRESENTATIVE NAME/TITLE _____	COMPANY NAME _____
AUTHORIZED REPRESENTATIVE SIGNATURE _____	DATE COMPLETED _____

# APPENDIX 64: DEQ NOTIFICATION FORM



## ASN 6

### DEQ Notification Form

### Nonfriable Asbestos Abatement

For DEQ use only
Date Received: _____
Amount Received: _____
Check Number: _____
Project Number: _____

#### ATTENTION

**CONTRACTORS/OPERATORS:** This notification is not complete unless it is accompanied by the required \$100.00 fee and is submitted 5 days prior to the start date. To inquire about a waiver of the 5-day waiting period or for other information call 1-800- 452-4011 for the phone number of your local regional DEQ office. [Click here](#) to find the information online.

\_\_\_\_\_ **EMERGENCY (Emergency notifications require a 50% fee increase)**

**Emergency Approved by (list DEQ staff):** \_\_\_\_\_ **Date:** \_\_\_\_\_

**List the Reason for the Emergency** \_\_\_\_\_

(i.e. Fire or Water Damage, Dangerous Structure, etc.)

Is this a revision to a previous notification? Yes \_\_\_\_\_ Revision# \_\_\_\_\_ No \_\_\_\_\_

Start date of project: \_\_\_\_\_ End date of project: \_\_\_\_\_

Days of week and hours to be worked: \_\_\_\_\_

Project site name: \_\_\_\_\_ Building Owner: \_\_\_\_\_

Project address: \_\_\_\_\_

(Include Apt #, Floor #, Bldg #, school name or any other pertinent site location information)

City: \_\_\_\_\_ County: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Was a survey performed or samples collected: Yes: \_\_\_\_\_ No: \_\_\_\_\_ By whom? \_\_\_\_\_

Type of nonfriable material to be removed: \_\_\_\_\_

Amount of nonfriable asbestos material to be removed. Square or Linear footage: \_\_\_\_\_

Contractor/Operator name: \_\_\_\_\_ Phone: \_\_\_\_\_

Contractor/Operator address: \_\_\_\_\_ City: \_\_\_\_\_

County: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ CCB

registration number: \_\_\_\_\_ Competent Person: \_\_\_\_\_

Waste disposal site: \_\_\_\_\_

Site address: \_\_\_\_\_ City: \_\_\_\_\_

County: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Waste hauler: \_\_\_\_\_ Phone: \_\_\_\_\_

**Sign below and send this form with the appropriate fee to the DEQ Business Office at 700 NE Multnomah Street Suite #600, Portland, OR 97232. Make checks payable to "DEQ"**

Name of owner, operator or contractor: \_\_\_\_\_

Name: \_\_\_\_\_ Phone: \_\_\_\_\_

(PLEASE PRINT)

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

*I certify that the information contained in this notification are true and correct to the best of my knowledge and belief.*

**CAUTION!** If the material being removed is handled in a manner that causes it to become friable (shattered, pulverized, or reduced to dust), then only a DEQ licensed asbestos abatement contractor may perform the removal work. Submit nonfriable notifications and fees in accordance with OAR 340-248-0260. Revisions to notifications may be emailed or faxed to the appropriate DEQ regional office. Fax numbers: Portland at 503-229-6957, Bend at 541-388-8283, Pendleton 541-278-0168, Salem at 503-378-4196, Medford at 541-776-6262 or Coos Bay 541-269-7984.

# APPENDIX 65: ASBESTOS CHECKLIST

## ASBESTOS SAFE WORK PROCEDURE CHECKLIST

The crew lead and/or on-site competent person will ensure this checklist is reviewed and completed before any work involving AC pipe commences. This checklist must be fully completed, signed and dated. The completed checklist will be forwarded to the Regulatory Specialist after completion of task.

### Training

- All crew members have been trained IAW City of Pendleton Safety Manual CH 16 and Class III Asbestos certification for AC pipe work.  Yes  No

### Equipment

- |  |   |
|--|---|
| <input type="checkbox"/> Roll cutters or similar tool                                | <input type="checkbox"/> Waterless hand cleaners                                    |
| <input type="checkbox"/> Garden sprayer with adequate supply of water and surfactant | <input type="checkbox"/> Large wipes for cleaning tools and equipment               |
| <input type="checkbox"/> Asbestos Yellow Disposal Bags                               | <input type="checkbox"/> Asbestos warning signs with cone                           |
| <input type="checkbox"/> Duct tape   | <input type="checkbox"/> Black, 6 mm, sheet plastic                                 |
| <input type="checkbox"/> Asbestos barrier tape                                       | <input type="checkbox"/> Hooded Tyvek disposable coveralls                          |
| <input type="checkbox"/> Rubber boots  | <input type="checkbox"/> Laminated CH 16  |
| <input type="checkbox"/> Rubber gloves   | <input type="checkbox"/> Safety glasses   |
| <input type="checkbox"/> P100 Half-Mask Respirator                                   | <input type="checkbox"/> Pipe, collars, specific tools etc. required for the repair |

### Other Notes

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By my signature, I verify that all the items above are on site or have been reviewed or verified.

**Competent Person/Crew Lead/Supervisor** (Print Name) \_\_\_\_\_

**Competent Person/Crew Lead/Supervisor** (Signature)\_\_\_\_\_

**Address or site of work:** \_\_\_\_\_

**Date work conducted:** \_\_\_\_\_

# APPENDIX 66: ROOT CAUSE INVESTIGATION

## OSHA ROOT CAUSE INCIDENT INVESTIGATION GUIDE

INVESTIGATOR:

DATE:

1. Is there a written task/job procedure for employees to follow when operating power driven machinery?

2. Did task/job procedures or standards identify the potential hazards when operating power driven machinery?

3. Were there any hazardous environmental conditions present that may have contributed to the incident?

4. If so, were the hazardous environmental conditions in the work area recognized by the employees or supervisors?

5. Were there any actions taken by employees, supervisors, or both, to eliminate or control environmental hazards?

6. Were employees trained to deal with any hazardous environmental conditions that could arise?

7. Was there enough space to do the required task?

8. Was there ample lighting to do the required task?

9. Were employees familiar with job procedures for the job tasks assigned?

10. Was there any deviation from the established job procedures?

11. Were proper equipment and tools **available** and **being used** for the job?

12. Were there any mental or physical conditions present that may have prevented the employees from properly performing their assigned jobs?

13. Were there any tasks in the job that could be considered to be more difficult or more demanding than usual? (strenuous activity, excessive concentration required, etc.)

14. Was there anything different or unusual from normal operations?

15. Was the proper PPE specified for the job tasks?

16. Were employees trained in the proper use of the PPE?

17. Did employees use the prescribed PPE?

18. Was the PPE damaged or not properly functioning?

19. Were employees trained and familiar with proper emergency procedures, including the use of specialized emergency equipment and was the equipment available?

20. Was there any indication of misuse or abuse of equipment/materials at the incident site?

21. Is there any history equipment failure?

22. Were all safety alerts and safeguards operational and was the equipment functioning properly?

23. Are all employee certification and training records current and up to date?

24. Was there any shortage of personnel on the day of the incident?

25. Did supervisors detect, anticipate or report any unsafe or hazardous conditions?

26. When performing tasks/jobs that occur on an infrequent basis, did supervisors or employees participate in task/job review sessions before starting the task/job?



